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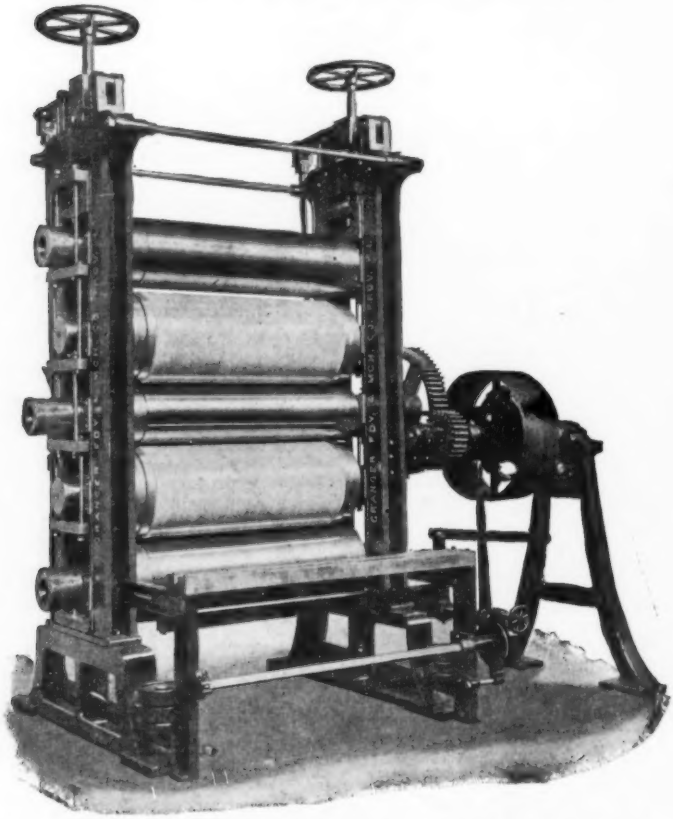

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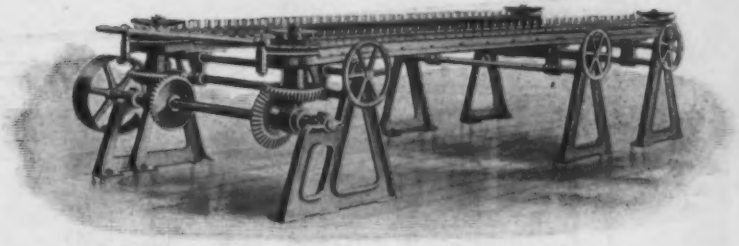

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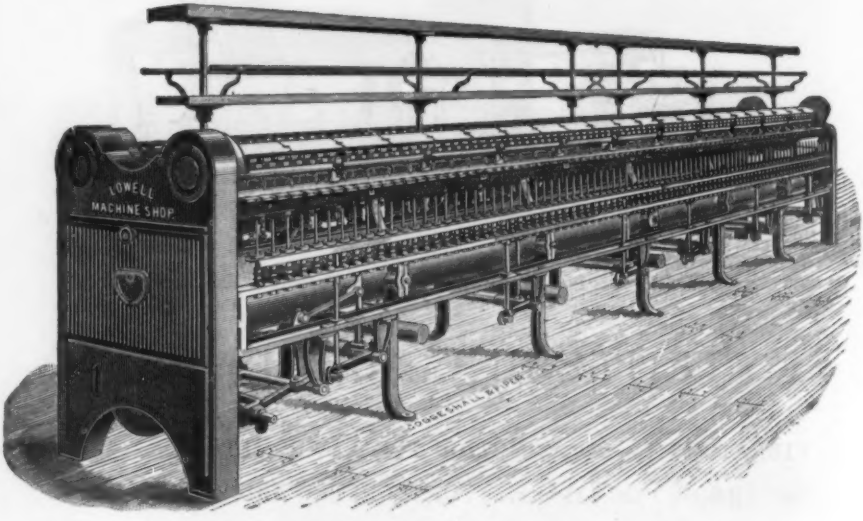

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Drawing Frames,
Roving Frames,
Ring Spinning Frames,
Twisters, Spoolers,
Warpers, Slashers,
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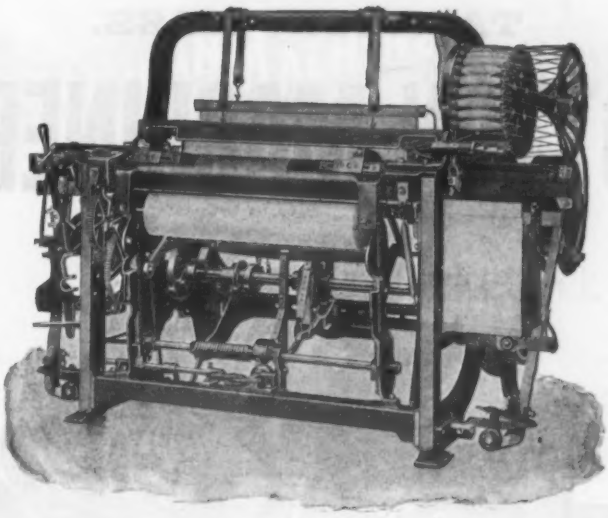

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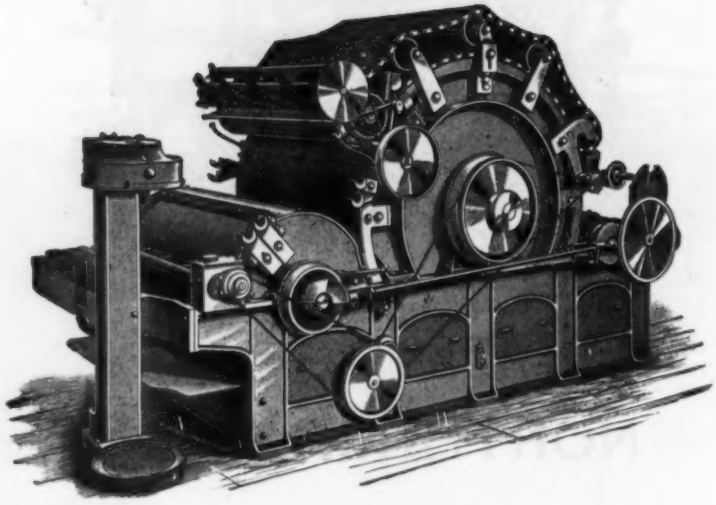

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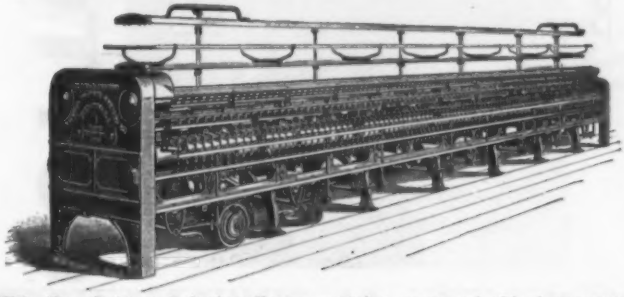

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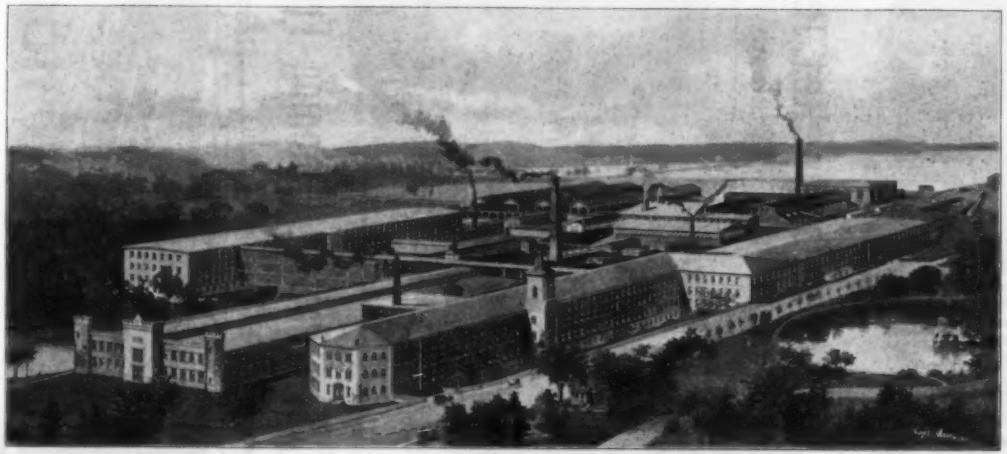

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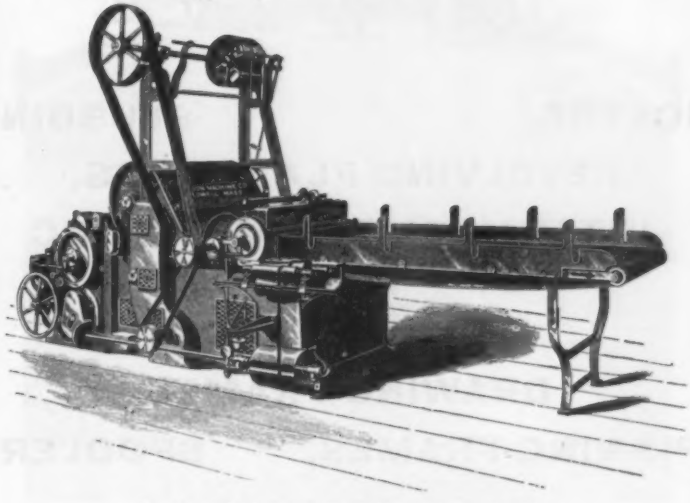

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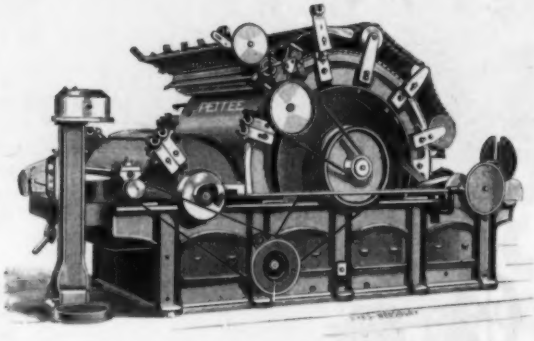

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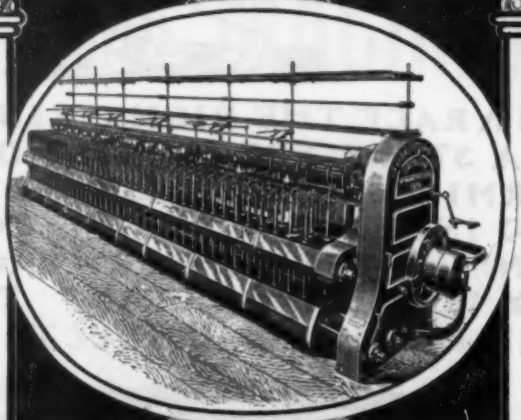

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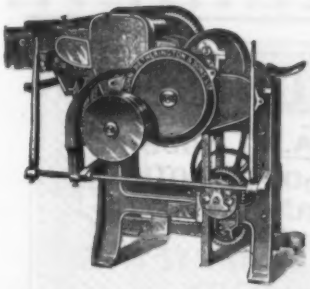

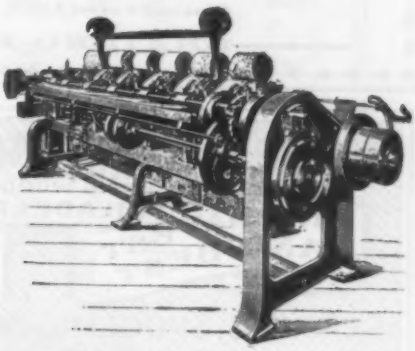

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with Self Acting Stop Motion.

Ribbon Lap Machines
with six Laps behind for preparing Laps for Combing Machines, made to suit any width of Laps required.

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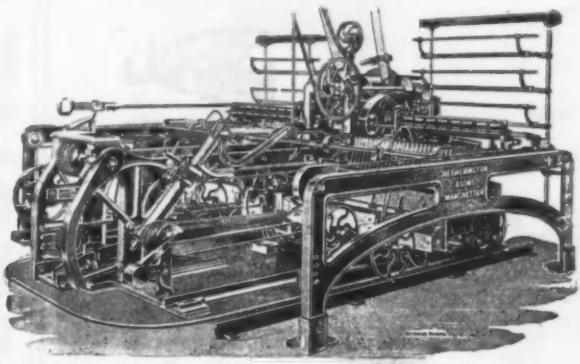
single and double Nip for six or eight heads, to take Laps from 7 1-2 in. to 10 1-2 in. wide. Patent Stop Motions for stopping Machine, when delivering too light Slivers, or after any required length has been delivered.



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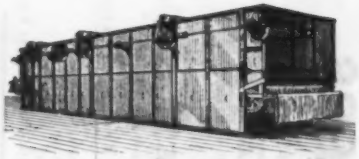

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For Hosiery, Underwear, Yarn, Cotton Stock, Wool, etc.

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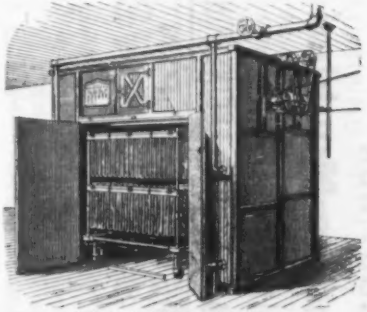

Truck Yarn Dryer.

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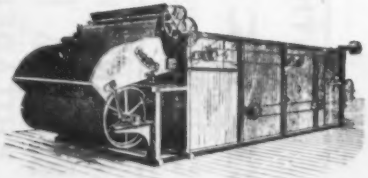

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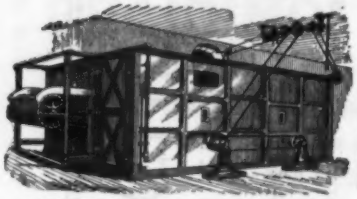

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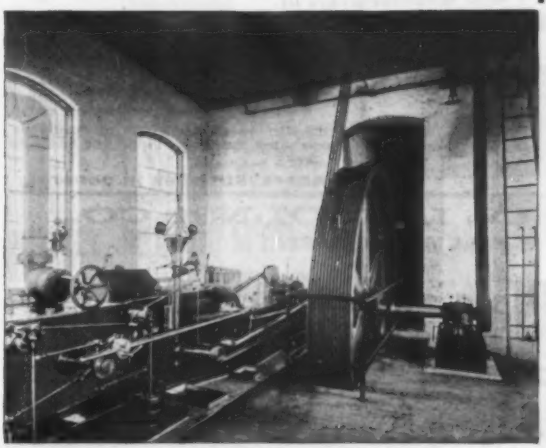

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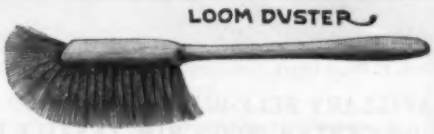

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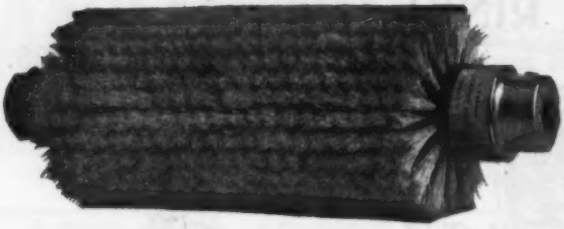

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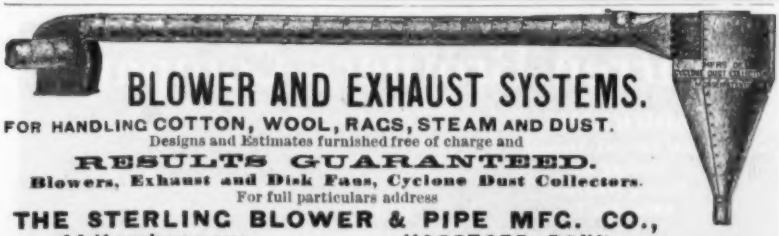

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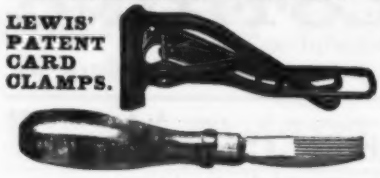

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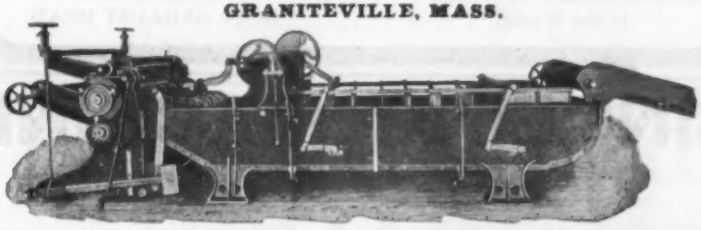

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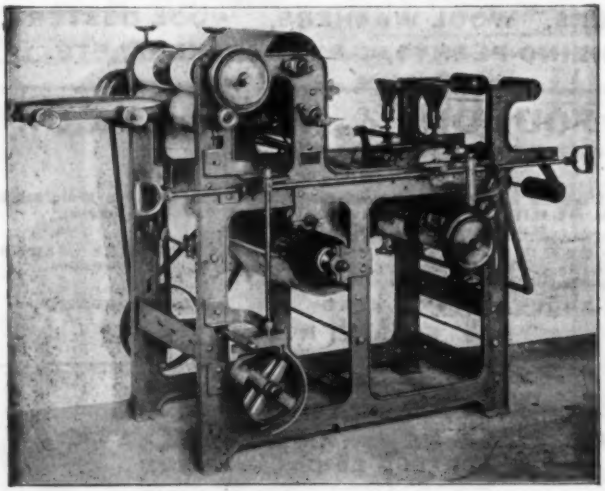

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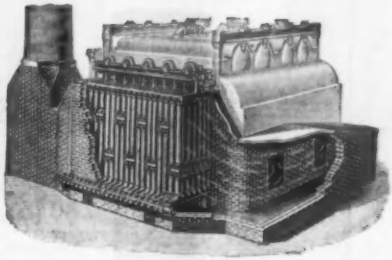

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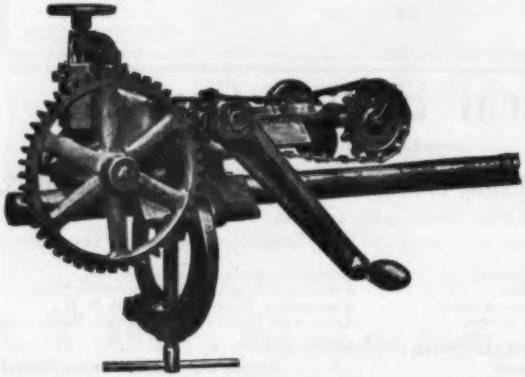

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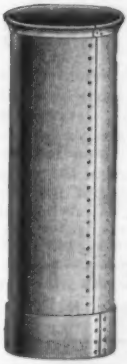

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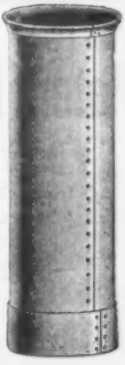

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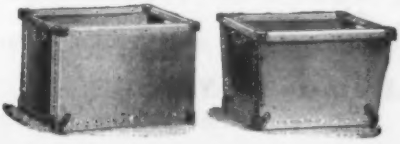

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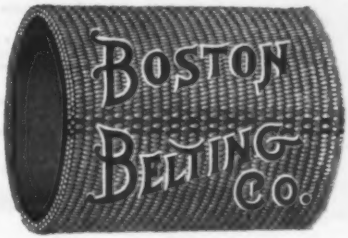

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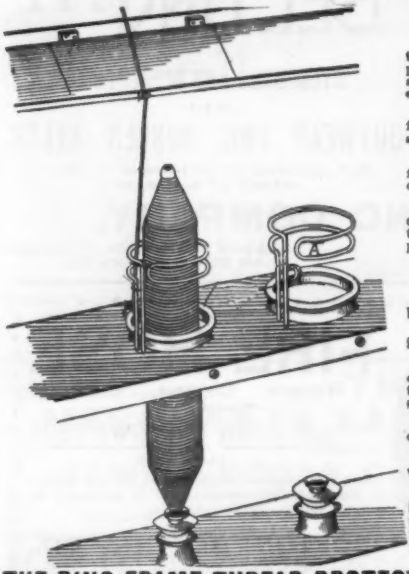

The following advantages are claimed for this protector.

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10. The life of the ring will be prolonged on account of decreased friction.

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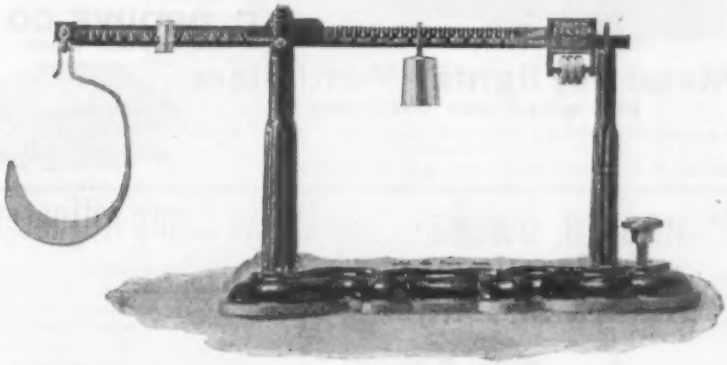

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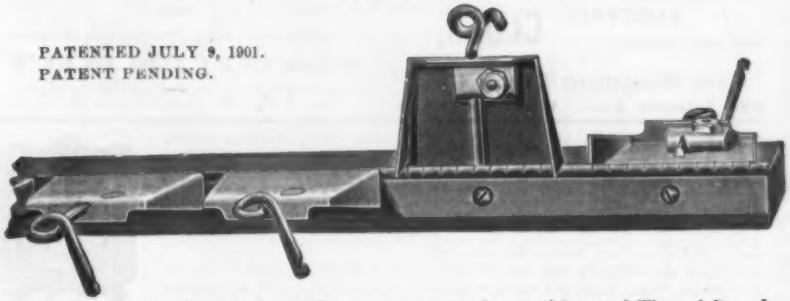

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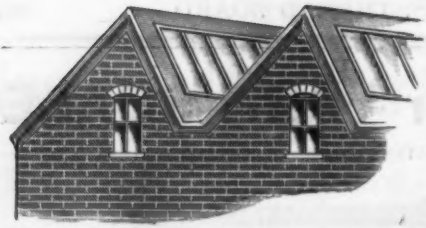

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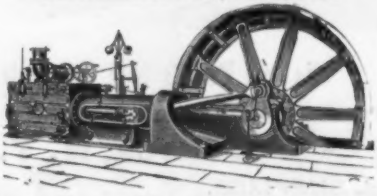

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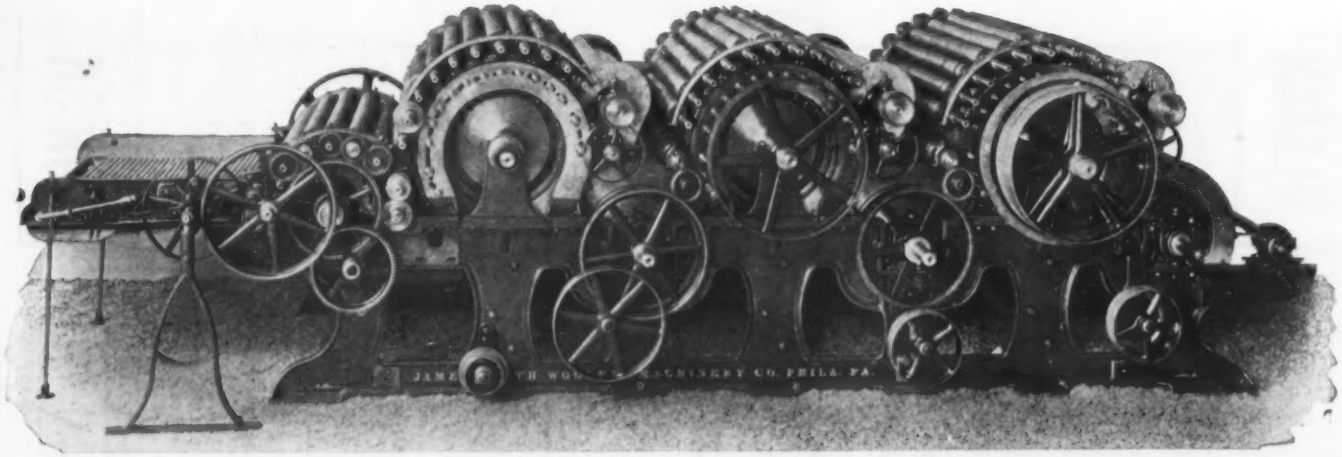

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List of Textile Patents.

Issued October 1, 8, 15, and 22.

Alarm Attachment for Carding Machine. 685,596. James L. Eadie and Charles N. Boston, Hartland, Me.

Apparatus for Bleaching Animal or Vegetable Fibre and Fabric made thereon. 684,182. Frank J. Briggs, Everett, Mass., assignor of one-third to Henry A. Locke and George F. Tarbell, Cambridge, Mass.

Apparatus for Spinning Cotton, etc. 684,714. William A. Phillips, London, England, assignor to the New Century Finance Company, Limited, Adelphi, England.

Dye from Cotton-seed and Method of making same. 683,786. Thomas Newsome, Roslindale, assignor by mesne assignments to American By-Products Company, of New Jersey.

Flat for Carding-Engines. 684,703. Charles Mills, Newton, Mass., assignor to the Saco and Pettee Machine Shops, Newton, Mass., a Corporation of Massachusetts.

Loom for Forming Flexible Conduits. 684,301. Harry G. Osburn, Chicago, Ill., assignor to Osburn Flexible Conduit Company, of New Jersey.

Process of Dyeing. 684,840. Pierre Mercier and Marc Chaumartin, Lyon, France.

Spinning and Doubling Frame. 684,519. Robert W. Moncrieff, Newport Pagnel, England.

Textile Fabric. 684,369. William A. Hagans, Los Angeles, Cal.

Woven Fabric. 684,980. Thomas B. Dornan, Philadelphia, Pa.

Warping Machine. 685,234. Walter J. Garlick, Paterson, N. J.

Drawback on Printed Cottons.

The Treasury Department has recently given instructions in regard to the payment of drawback on exported printed cotton cloth manufactured from bleached cotton cloth imported in the piece.

These directions provide that the entry under which the merchandise is to be inspected and laden must show the marks and numbers of the shipping cases and the number of pieces in each case, describing the same as they are described in the export invoices, showing the number of linear yards and width of each piece. To such entry should be attached a list identifying the pieces in each case separately by the marks and numbers of the case in which they are imported. This list should also show the number of linear yards in each piece, its width, and the number of threads per inch, and weight per square yard, as imported.

A sample of each kind and description of the goods comprised in the export shipment should be attached to said entry. Each piece of printed cloth should be so labeled that it may be readily identified with its corresponding description upon the preliminary entry.

The drawback entry should show the number of linear yards of each piece, of the several widths, count, and weights per yard, and value of the exported cloth, as well as the corresponding particulars of the same material in the condition in which it was imported.

A sworn statement of the manufacturers must accompany and form a part of the drawback entry showing various qualities and descriptions of imported bleached cotton cloth used, and should further show, in addition to the usual averments, that the exported goods were manufactured of imported materials, as described in such entry.

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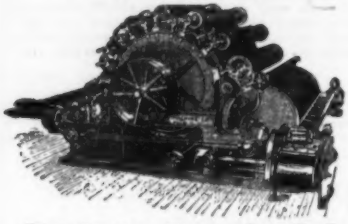

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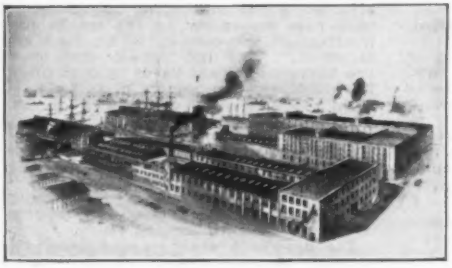

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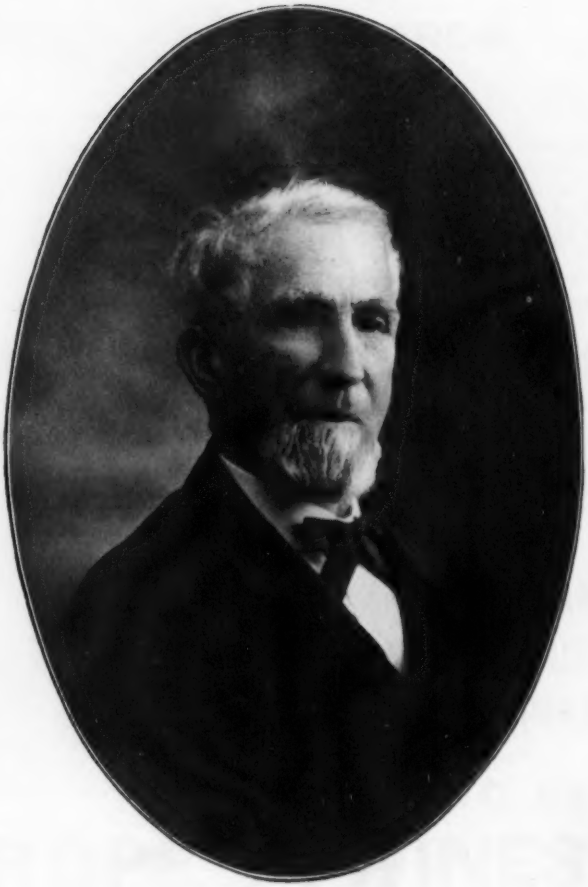


JOHN MAXWELL.

TEXTILE WORLD.

Vol. XXI. NOVEMBER, 1901. No. 5.

JOHN MAXWELL.

The subject of this sketch was born Feb. 23, 1814, at Hawick, Roxburghshire, Scotland. His father came from Thornhill, Dumfrieshire, and began the manufacturing of hosiery at Hawick, in which trade he had previously served his apprenticeship. His son John learned the business with his father, after having attended the parish school at Hawick.

Many manufacturers whose names have been prominent in the United States came from this section of Scotland; among them may be mentioned: Robert Blaikie, George Hogg, Walter Aiken and Alexander and Angus McKinnon.

Mr. Maxwell emigrated to the United States at the age of 26, and arrived in New York in May, 1840. At this date the knitting industry in America had hardly come into existence. Manufacturing of all kinds was depressed by the low tariff policy which prevailed, and which was maintained by the ascendency of the South in the councils of the nation. A few hand knitting frames were scattered here and there throughout the country, but there was no indication of the great future in store for this branch of manufacturing. General Harrison's election to the Presidency in 1840 and his policy of protection to American industries gave new life to business and the knitting industry shared in the prosperity.

In 1843 Mr. Maxwell went to Cohoes. At that time there was but a single one-set knitting mill at this place. This mill contained a few flat frames operated by power, which had been invented by Timothy Bailey; the mill was operated by Egberts & Bailey. These are said to be the first knitting frames operated by power in this country. Upon his arrival in Cohoes Mr. Maxwell secured the contract to make ribbed cuffs for this mill.

One of his earliest ventures after coming to America was the inventing of a knitting machine attachment for making plaid patterns. The idea was suggested to him by some English hunters who were stopping at the same New York hotel. They wanted plaid patterns on their knit hunting jackets. Mr. Maxwell invented a sliding presser worked by hand which effected the desired result. He received $7.00 a pair for trousers made on this frame. There was a fair profit on goods at this price at a time when nearly everything was imported free of duty.

In 1853 he secured a patent for an improved power knitting machine. This was the time when circular machines made their appearance. The first circular frames were operated at Cohoes by a Mr. Caldwell. They were of English make and ran horizontally, the cloth being drawn over a pulley and cut into lengths. The circular type rapidly superseded the flat frames.

In 1856 Mr. Maxwell went to Amsterdam and started the first knitting mill in that place with machines of his own make and patent. Adam W. Kline was his partner in this enterprise. Mr. Maxwell sold his goods direct at this time. On one occasion, when business was poor, he with one of his employees started on the road and sold goods at auction throughout the Western part of New York, keeping his mill busy while other mills were stopped. On this trip he re-

turned home but once, and then only for the purpose of taking a degree of Masonry.

Mr. Maxwell is now over 87 years of age and is still in active business, being President and Treasurer of the Wilton Hygiene Underwear Knitting Co., Philadelphia.

RECIPROCITY.

The rapidly increasing surplus of manufactured goods in the domestic market will result in disaster to our home industries unless larger markets are found for our products. Our own people are supplied in full measure with home products, and storehouses are filling up with goods. Mills, factories, workshops are pouring out a steady stream of useful products, far in excess of the requirements of our population.

The pressing question is this: What is to be done with the goods? A continuance of the present rate of production means overproduction, lower prices, lower wages and hard times in the not distant future. The danger is real, although apt to be overlooked in the midst of present prosperity. It threatens nearly every industry and individual. It is the problem that weighed heavily upon the mind of William McKinley. It formed the subject of his last public address, the day before he was shot down. It is in fact the most pressing question before the public today.

When the business of an individual manufacturer gets into a similar condition, he either shuts down his mill or hustles around and sells his goods. Both for individuals and nations these are the only alternatives.

We have, as a nation, already done some hustling with commendable results. The "American invasion" is the spectre that haunts the foreign manufacturer. He sees American goods of all kinds displacing his own products. The progress made in this direction falls far short, however, of a remedy for the overproduction.

As an aid in securing wider markets abroad, the policy of reciprocity is proposed and has received much support in influential quarters. It cannot be denied that at the present time it is growing in popularity. In theory it is attractive. We are to lower our tariff rates on certain lines of imported goods which do not compete with our home products. The countries thus favored are to reciprocate and lower their tariff rates upon such of our goods as may not compete with their products.

This is the theory of reciprocity. Both parties to the agreement are to be benefited. No one is to be injured, and everyone is expected to be happy.

It is a theory to which no one can take exception. But can the theoretical advantages be realized in practice? Upon that point hinges the whole question. We can judge of its practical aspect by the provisions of various treaties of reciprocity that have been negotiated and are now awaiting the action of the Senate.

One of these treaties was negotiated with Great Britain and provide of mutual concessions in our exchange of products with Barbados, British Guiana, Turks and Caicos Islands, Jamaica and Bermuda. Another was negotiated with the Argentine Republic and a third with France.

The two provisions in these treaties which are of most interest to textile industries, and which probably have excited most opposition from the industries affected, are the two providing for a reduction of 20 per cent. on the Dingley Tariff on hosiery and knit goods from France and a like reduction of the rates on wool imported from the Argentine Republic. The wool growers offer a strenuous opposition to any reduction of the wool duty, and are claiming that instead of a reduction the rates should be increased; while the knit goods manufacturers oppose any reduction of the duties on their manufactured product for fear of its injurious effect on their business.

The comments which these treaties have brought forth, impress one with the probability that reciprocity in practice will resemble "tariff reform" in practice, in that its popularity is greatest among those whose interests are not affected by the change in duties.

The present duty on wool is equal to about 60 per cent. ad valorum. The Argentine treaty would reduce this rate to 48 per cent. on wool imported from the Argentine Republic.

The present duty on hosiery and knit goods varies from 60 per cent. on cotton goods to 130 per cent. on woolen and part woolen goods. The French treaty will reduce these rates to 48 per cent. and 104 per cent. respectively.

There is an urgent necessity for the industries of the United States to secure wider markets, and any proposal to further this object should be given a fair hearing and in case it promises well, a fair trial. On the other hand it should be borne in mind that revision of tariff rates by treaty is in the main an untried experiment. The old way of revision by Congress after the issue had been discussed before and voted upon by the people had the advantage that every one was afforded a chance to express his views and record his vote. The people received what they voted for.

By the treaty method, the schedules are arranged in secret by commissioners, who are controlled by considerations of expediency. The people affected receive the first notification of the changes in rates when the treaty is sent to the Senate to be confirmed or rejected. The Senate is the only court of appeal.

It should, however, be the aim of every one to give the experiment fair treatment. As far as the textile industries are directly concerned the two questions are: first, Shall the duty on Argentine wool be reduced from 60 per cent. to 48 per cent.? Second, Shall the duty on French knit goods be reduced from 60 to 130 per cent. to 48 and 104 per cent.?

The industries of the country stand or fall together. No class of producers, whether in the textile or any other industry, can afford to pursue a dog in the manger policy as regards reciprocity. On the other hand none should be subjected to a withdrawal of a fair degree of protection.

WAGES AT FALL RIVER.

It is a subject for congratulation that the threatened strike of the Fall River cotton mill operatives has been averted, owing to the good sense of the operatives themselves, who have during the last few months been placed in a very trying position. It is natural for them to assume that when one large mill voluntarily raises the wages, others should do the same, and they deserve credit for reaching a conclusion based upon a calm consideration of facts.

We have during the past few issues devoted considerable space to this question, and have endeavored to state clearly the present conditions of the print cloth business, in order to guide our readers interested in this question to a correct decision in regard to the strike.

These articles from the Textile World have been copied extensively, particularly by the press of New England, and we believe that the facts which we have brought out have been presented in such a way as to exercise considerable influence on public sentiment, particularly among the operatives themselves.

COTTON MANUFACTURE IN THE SOUTH.

In an address before the Georgia Industrial Association, G. Grunby Jordan called attention to conditions affecting cotton manufacturing in that section, which merit the careful consideration of all interested in Southern industries. Mr. Jordan, as president of the Eagle and Phenix Mills, Columbus, Ga., is prominently identified with cotton manufacturing in the

South, and his practical experience qualifies him to speak for the industry in that section. His remarks contain no trace of rainbow chasing or wild dreams of capturing the world's markets; he calmly considers the present state of things, and is as quick to note the dangers which threaten the prosperity of the South as to exult in the progress which that section has made and the prospect of still greater development in the future.

He first warned the Southern planter to abandon attempts to restrict the production of the raw material, pointing out that any prolonged enhancement of cotton prices would stimulate the growth of cotton in other lands, and supported this view by referring to the rapid growth of cotton raising in Asiastic Russia, as well as the fact that Indian and Egyptian cotton have become an important factor in the cotton trade. He told his hearers that the only way to preserve the supremacy of the South in cotton growing is to keep the prices down by ploughing deeper, manuring more scientifically and handling the staple in less wasteful ways.

The prosperity of the South rests upon the cotton crop; every class of people, farmers, workmen, professional men, all depend upon the cotton crop; the value of Southern railroads fluctuates with the size and value of the cotton product, and, now that cotton manufacturing has grown to such large proportions in the Southern States, this branch of the cotton business added to that of cotton growing is another powerful factor in the prosperity of the country.

Mr. Jordan stated that there were many reforms that should be effected and which such an association as that before which he was speaking could do much to promote. One of them was the inequality in freight rates by which the rate for transporting cotton to Southern mills was in some cases even higher than for transporting the same material to the more distant Northen mills; not only was this inequality applied to the rates on raw material but also on the manufactured goods which custom has decreed the manufacturers should deliver to their customers.

Another difficulty which the Southern manufacturer has to contend with is the favoritism by which exporters of cotton can utilize expense bills when purchasing cotton at the smaller shipping stations. Mr. Jordan stated that a cotton manufacturer entering a cotton warehouse to purchase his supplies, is often confronted with the fact of not being able to use the freight expense bills, but must pay for the cotton one-eighth of a cent more than the exporter does.

The speaker next directed his attention to the lesson which adversity had taught the cotton spinning mills of the South in regard to better methods of selling their product. The manner in which he reproved many of his fellow manufacturers in the South for mistakes in the past is well shown by a quotation from his address.

In the exuberance of youth some of our freshest Georgia textile manufacturers have imagined that because one lucky year, succeeding several years of profit-famine, naturally overtook them, they should herald to the world the discovery of a bonanza sure for fifty per cent. returns annually. Such ridiculous claims for cotton manufacturing do the legitimate business untold damage. It invites the inexperienced into ventures which can only end at best in disappointment, and often in dire disaster. This Association can do no better work than to see to it that its members learn to correctly estimate the cost of goods, to regularly credit "wear and tear," in making up annual statements, and to be educated to that truth that shareholders prefer six per cent. dividends regularly, coupled with the knowledge that there is a growing surplus; to erratic dividends, though they may sometimes be large, paid out at the expense of needed repairs or changes in machinery necessary to keep abreast of the progressive spirit of the times.

The principle advantage which the South possesses in respect to cotton manufacturing today is in the abundance of help, easily trained to manufacture medium and low goods and willing to work long hours at low wages. Mr. Jordan frankly pointed out that even this great advantage would not endure indefinitely, and said that already the cry comes from

the South; "We are short of laborers." It comes from the agricultural sections, from cotton mills, iron mines, fruit orchards, lumber districts and in fact from every section of the South where labor is employed.

The speaker stated that a very small percentage of the vast numbers of immigrants who come to America every year find their way to the South, and expressed the belief that, if the current of immigration could be changed toward that section, it would result in great advantage to the Southern interest. He told the Southern manufacturers that one of their great faults was their wasteful habits, and advised the members of the association to confer freely with one another, have carefully prepared papers read at their meetings and discuss the best methods of producing less waste and more cloth from a bale of cotton.

Upon the question of labor laws Mr. Jordan's remarks were rather general in character, but we infer that he is not in complete sympathy with the attempts now being made to regulate by law the hours of labor and the age of operatives in Southern mills. In this view of the case we believe he is mistaken, and that it will be better for the South, as well as for the whole country, to apply to that section the laws for the restriction of child labor and the hours of labor, which have proved by many years' trial in other sections of the country to develop a better class of operatives and citizens. We are prone to use the money standard in order to estimate the advantage and disadvantage of innovations, but better than vast stretches of mills and work shops is the presence of healthy, orderly and well educated people.

The speaker stated that one of the claims made for the South were longer legal hours for labor, and charged the selfish interest of other sections with the attempt to have a national law enacted limiting the hours of labor in all the States. Here again we feel obliged to disagree with Mr. Jordan, although we can easily see from the point of view of the Southern manufacturer this idea may seem plausible.

The movement for the restriction of the hours of labor in the South is not instigated by any particular section of the country, unless it be by the South itself. It is simply a tendency which has manifested itself wherever large and prosperous manufacturing industries have been established. While those who are temporarily benefited by long hours of labor in the way of increased profits of manufacturing may oppose the movement, and possibly delay its progress, there is back of it the force of public sentiment, which cannot be resisted and which will sooner or later make itself felt.

The speaker stated that the advantage claimed for the South of being near the cotton field thus saving much of the expense of transportation of the raw material to the mill was fast disappearing, and cited statistics to show that 33 per cent. of the cotton consumed by North Carolina mills last year was brought from States in the South and West, and that South Carolina mills paid freight from other States upon 25 per cent. of their cotton consumption. The rates are by no means low, and consequently the advantage of cheap transportation on raw material has to a large extent disappeared.

Then the advantage of cheap power possessed by the South claimed the speaker's attention, and here again he saw a cloud on the horizon in the shape of the six-inch oil gushers in Texas which promise to furnish power to manufacturers cheaper than do the waterfalls of Georgia and the Carolinas or the cheap coal of other sections of the South. The advantage of oil as a fuel is indicated by the estimate made by good authority that the Southern Pacific railroad will save $4,800,000 annually in its fuel account when the locomotives have been

changed into oil burners. He summed up this phase of the question in the following words:

> With the cotton production question settled, with the fuel question so largely in its favor, and the nearby Mexican cheap labor to draw from, we may find that Texas, in the next few years, will be the great cotton spinning state of the South.

He then took up the question as to the class of goods manufactured, and declared that the South could not continue indefinitely the manufacture of coarse goods, that already the limit has been exceeded beyond which the consumer will not take the product from the manufacturer; the advice which he gives the Georgia manufacturers in the following words can be applied equally well to all manufacturers of coarse goods whether North or South:

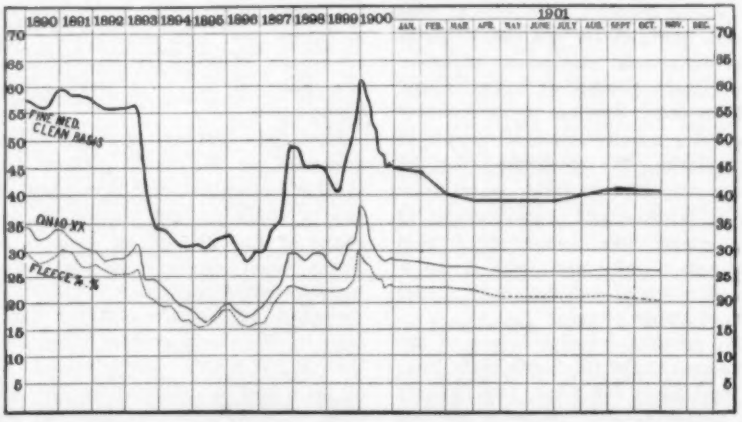
> Then it may be worth the while for this Association from time to time to discuss the question whether or not the mills in Georgia should not begin to manufacture something higher than the cheaper grades of cloth and the coarser numbers of yarns. Our destiny, I am confident of, and believe that Georgia will have to be a large manufacturing State; but it is entirely possible that we should begin now to get on, certainly, a medium class of goods and eventually on finer numbers.

To make fine goods instead of coarse goods the Southern mills must have skilled operatives who have spent years in the manufacture of fine yarn and cloth; recognizing this fact, Mr. Jordan urged upon the association the necessity for educating both the hands and the mind. He cited what had been done at his own mill in the way of encouraging self-improvement among the operatives. This excellent system, inaugurated by the Eagle and Phenix mills, of which Mr. Jordan is president, is already familiar to our readers. Speaking of the textile schools he said:

> There is a growing need in every mill in this state for more proficient native-born young men to fill the important positions. This Association can be of incalculable benefit to the institutions composing it, to the state, itself and to our section, by upholding and encouraging the industrial and technological schools, by seeing that our ambitious young men, who must soon take the responsible places in these mills, are not merely scientific but practical men, who, knowing what is required to insure best results, can see to it that each department is so operated as to command success.

The address from beginning to end was filled with good practical advice from a practical man, who, while being no pessimist, did not hesitate to recognize facts and to point the remedies for the dangers and difficulties which already beset the cotton manufacturing industry of the South.

WOOL MARKET.



The movement in wool has been in fairly large volume during October, and this in connection with the moderate volume of sales indicates that the purchases have been chiefly for consumption.

Prices during the latter part of the month have softened a little owing

probably to the fact that manufacturers were in a position to see their way out of the light weight season, having covered their orders for goods, and consequently were under no necessity to make further purchases. Wool at the seaboard is in strong hands, and the low offers made by manufacturers are not followed by any large volume of business.

The mills have been very busy consuming large quantities of wool, and this will probably have its effect in strengthening the market position of the staple.

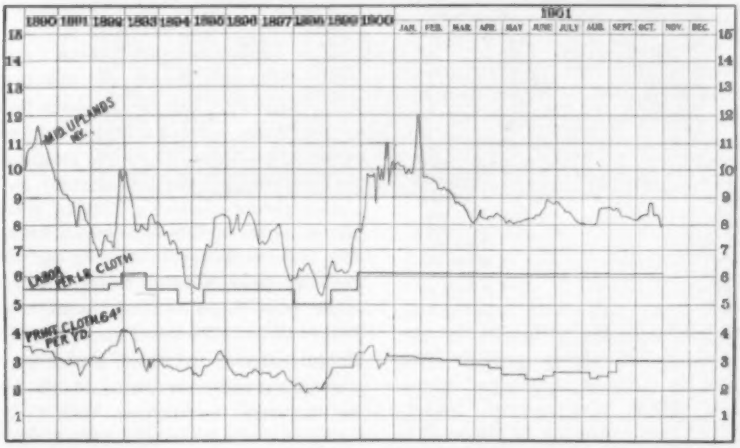
A feature of the goods market is the increased use of wool, which is the natural accompaniment of the drop in price. At 60 cents per pound for fine medium wool, the manufacturers were forced to use a substitute, but at 40 cents it is an entirely different story, and in consequence we hear much less of the competition of cotton worsted and shoddy goods.

While the mills have been busy, the goods manufactured have been on orders booked early in the season. No new business has developed, and there has been more or less complaint from purchasers of the goods, on account of the delay in delivering sample pieces.

The report from abroad indicates a slackening in the demand for wool and a slight lowering of quotations for the raw material. It is not likely that any material advance will take place in the domestic market. If any attempt should be made by the dealers to boom prices, the manufacturers stand ready to use the club of cheap substitutes to beat down quotations.

The wool business may be said to occupy a healthy position. Prices are neither very low nor very high. Business is confined to legitimate needs of manufacture and it will be well for all parties if this condition of affairs continues.

COTTON MARKET.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900
1901
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
MID UPLANDS
LABOR PER LB. CLOTH
PRIME CLOTH 64" PER YD.

October has witnessed a recurrence of the old game in the cotton market by which quotations are boosted up by reports of damage to growing crops and later sent down upon reports of favorable conditions in the cotton fields.

This see-saw serves the purposes of speculators admirably, but it is anything but beneficial to the interests of the textile manufacturers and consumers of the goods. The facts seem to be that the conditions are favorable for the new crop.

The shipment has been large, due, probably, to the desire of foreign spinners to replenish diminished stock. This movement has been coincident with the drop in quotations which took place the latter part of October.

The condition of the goods market has undergone no material change since our last writing. Quotations have been maintained and in some cases advanced, as in the case of print cloth. The print cloth market, owing to exceptional conditions existing at Fall River, has ceased to be the standard by which the conditions of the cotton goods market can be judged. While print cloth has sold at 3⅛ cents at Fall River, it appears that this price is confined to Fall River goods, and the bidders are so impressed with the superior quality of the print cloth made in Fall River, that they decline to make any bid whatever, on goods coming from mills outside of that city. A fair quotation on print cloth at the end of October is 3 cents, despite the higher figure referred to.

The Chronicle reports the visible supply of cotton on October 25, 1901, at 2,493,759 bales, as compared with 2,671,775 on the same date in 1900; 3,553,344 in 1899; 3,574,488 bales in 1898.

According to the annual review of the cotton trade by Mr. Ellison of Liverpool, the world's consumption of cotton during each of the last ten years was as follows:

World's Consumption.	*Total.*
1891-92	10,471,000
1892-93	10,247,000
1893-94	10,554,000
1894-95	11,397,000
1895-96	11,532,000
1896-97	11,880,000
1897-98	12,889,000
1898-99	14,015,000
1899-00	13,773,000
1900-01	13,593,000

According to the authority the proportion of the above quantity consumed by mills in the United States was in 1891-92, 24½ per cent.; 1900-01, 27½ per cent., showing an increase in the proportionate quantity of cotton consumed of only 3 per cent. in nine years.

The same authority estimates the number of cotton spindles in operation throughout the world as 105,420,000, of which 20,870,000, or in round figures, 20 per cent., are in the United States.

Seasonable Fabrics.

COTTON GOODS.

One of the most striking features of the coming season will be the development of what are generally known as wash dress fabrics. The productions of last season were so far in advance of anything that had ever been attempted before that it seemed doubtful if any great improvements could be made for this season, but a glance over the lines being offered by some of the leading manufacturers will convince even the most casual observer that the achievements of this season mark the highest point yet reached by domestic manufacturers.

Many lines of desirable fabrics are already well sold up. Some staple productions are entirely sold for the coming season and manufacturers are not in a position to accept any further orders. The present tone of the market is decidedly firm both for present and future delivery, and a continuation of existing conditions is confidently looked forward to.

Fine sheer printed fabrics have sold exceptionally well and the business on staple and well-known lines of ginghams has been almost unprecedented. The situation on ginghams is very strong indeed and every indication points toward a decided scarcity of goods of this description before the season is over; in fact, at the present time many of the leading lines have been entirely withdrawn from sale on account of the unusually liberal manner in which orders were placed not only by the jobbers but by the manufacturers as well.

While many novel and purely original designs may be noted, many of the beautiful effects of high priced foreign fabrics have been copied and reproduced in domestic goods to sell at popular prices.

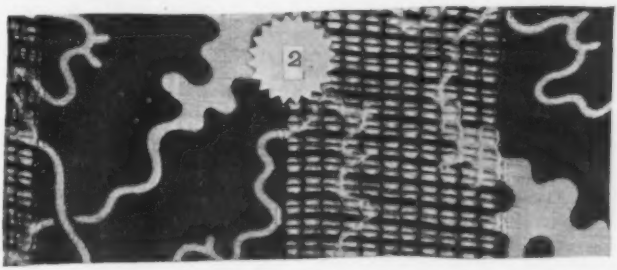
The Parkhill Mfg. Co. of Fitchburg, Mass., have sustained the well-earned reputation of their Toile du Noid in the extensive line of new

woven effects which they have placed on the market for spring of 1902. The remarkable durability of this cloth and the excellence of loom work and colorings, are well-known characteristics and need not be dwelt upon. We illustrate at Fig. 1 one of their good selling styles. The season's price on Toile du Nord has been placed at 8 cents, less 5 per cent. for 28-inch goods.

In the finer printed fabrics, numerous beautiful and novel designs have been produced which are characteristic of the high point of excellence reached by domestic manufacturers. One of the most strikingly beautiful fabrics which has been brought out by the Arnold Print Works, under the name of Point D'Alencon, is illustrated in Figure 2. This is a combination of heavy open-work stripes of even mesh and sheer tissue stripes with a wavy irregular over-pattern in white. It is a strikingly beautiful design and has sold very freely at 10½ cents less 10 per cent. in 30-inch width.

Another very successful production of the Arnold Print Works, which is noted for novelty of design and beauty of color combinations, is illustrated at Fig. 3. This is a fine printed dimity and the line has been an excellent seller at 9½ cents net, 30 inches wide. The style represented is particularly striking. The style illustrated is a beautifully printed white and black lace effect stripe on a fine dimity cloth of a variety of delicate colorings, blue, pink, lavender, heliotrope, etc., and was sold up early in the season.

The business done on prints and percales as well as on the finer goods has also been extremely satisfactory. At Fig. 4 is illustrated three styles of the Gibraltar black and white percales made by the Pacific Mills, which have been freely bought up at 6¼ cents net, 31 inches wide. Here, again, we have the lacey effects which are so prominent in all the most popular styles of spring wash dress goods and which will, undoubtedly, be a feature of the season.



On white goods, the bulk of the early business for 1902 has already been placed, and from now on, only a steady, moderate business may be looked for. The majority of manufacturers and converters have their production sold up to the limit, and as the gray cloth situation is strong, the present firm tone of the market will

undoubtedly hold throughout the season.

WOOLEN GOODS.

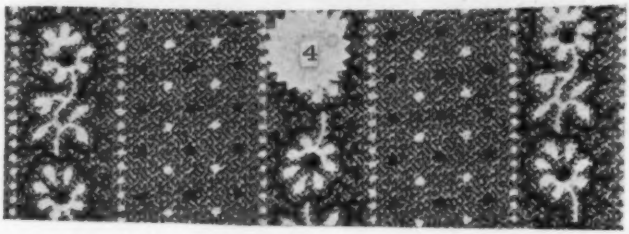
No developments of any consequence have been noted in the market for men's wear woolens or worsted fabrics during the past few weeks. The principal question considered being that of getting deliveries of sample pieces on contracts already placed. Complaints of backward deliveries and consequent inconvenience are almost universal, and the majority of the leading lines have been so well sold up that the buyer has little redress, since, under the existing circumstances, there is no opportunity for him to cancel his contracts and successfully attempt to substitute required styles elsewhere.

It is absolutely necessary that the clothing manufacturer should have an early and prompt delivery of his sample pieces in order that he may get his sample garments out in good season; hence, the tardiness of manufacturers this season is causing the clothing manufacturer considerable inconvenience, and, in a great many cases, absolute loss.

It is quite evident that many agents in their anxiety to get business early in the season, were led to promise an earlier delivery of sample pieces than they can possibly make. An instance of this kind was brought to the attention of the writer a few days ago where a certain large garment manufacturer had placed orders in August for over 600 styles with the definite understanding that sample pieces were to be delivered in September, but up to the middle of October only about 200 sample pieces had been delivered, less than one-third, and he was then attempting to substitute elsewhere, but with little success.

SILK GOODS.

The fall season in silks, which was a little later than usual, has proven very satisfactory, and already some attention is being devoted to new lines for spring delivery. Although it was at the opening substantially a plain season, later developments brought fancies into considerable prominence and at the present time warp prints, Pekins and lace effect stripes are in steady demand.



In plain goods, taffetas and peau de soies have been the leaders and were used very extensively by garment manufacturers. Quite a good business has also been done on 54 inch heavy weight black taffetas, which were cut up by manufacturers for raglan coats.

For the Spring season foulards and

printed satin liberties will occupy a prominent place, although very little business on this class of goods has been booked up to the present time. In the line of pile goods, velvet cords have had a phenomenal sale and importers of this class of goods are sold up for several weeks in advance and cannot promise deliveries before November.

The wide cords from ⅛ to ¼ inch wide have been the best sellers, and the market is practically cleaned up on grades of this description. Domestic manufacturers are turning out some very creditable goods, ranging in price from 50 to 75 cents, the colors being almost as bright and clear as foreign goods. Prices have been advanced from 5 to 10 cents per yard, and should the demand continue further advances will undoubtedly be made.

Yorkshire Cheap Woolen Mixture Tweeds.

BY S. B. H.

We have in former letters spoken about the cheap woolen mixture tweeds which many Yorkshire woolen manufacturers are producing, and it is now that we give some concrete evidence to American manufacturers of what is actually being produced, together with full weaving particulars, designs and photographs of the actual cloths, while if any manufacturer interested in the fabrics desires to see them, his wish can be gratified by calling in at the Boston office of the Textile World.

No greater development has taken place in any one department of the Yorkshire woolen industry than in the production of cheap mixture tweeds for the million; from Leeds to Huddersfield thousands of pieces are being turned out every week.

The first pattern we come to notice is one which to our thinking is a marvel of cheapness at 38c., 55 inches, 21 to 22 ounces; here we have a fabric that no one would be ashamed to wear. The firm producing this cloth here has had a great run on it, and well they might at the price. The weave used is the ordinary four leaf twill. This is the weave with which 75 per cent. of the tweeds are woven.

The pattern before us is rather a bad one to produce in a photograph, it being of rather a dark mixture, several shades of which are all blended harmoniously together.

Warp: 1 thread fancy, dark crimson; 3 grey; 4 brown; 4 grey; 2 brown; 2 grey; 2 brown; 2 grey; 2 brown; 2 grey; 2 brown; 2 grey; 2 brown; 2 grey; 2 brown; 2 grey; 4 brown; 4 grey; 4 brown; total 48 threads to pattern. Weft same as warp.

The cloth has 29 threads of warp and 26 threads of filling per inch finished. The grey used is a very dark steel grey mixture of the cheviot order, the brown being a very dark shade made from similar quality material. All the warp yarns have twisted around them a black cotton thread in order to make the yarns weavable, this being largely practised in the Huddersfield district. The pattern and cloth is of a very useful nature.

At No. 2 we have a very good design, which is very fashionable indeed. It is of the "herring-bone" order, this design being very popular at present throughout England, not only for suitings and trouserings, but also for light overcoatings, the popular taste having got away from the plain twist venetians which held sway for so many years. This cloth is made of rather coarse material, handles sharp, but nevertheless has sold well at 43 cents, 6/4.

The white threads used in the warp should be a greyish white, because if pure white threads were used the coloring would be much too loud. The great object in all designing is to get colors and shades that blend harmoniously, and to prevent any single shade being too prominent.

Particulars as follows:

Warp: 1 fancy blue and white twist; 1 grey; 1 white; 1 grey; 2 white; 2 grey; 1 white; 1 grey; 2 white; 2 grey; 1 white; 1 grey; 2 white; 3 grey; 3 white; 3 grey; 3 white; 3 grey; 3 white; 3 grey; 3 white;

3 grey; 3 white; 2 grey; 1 white; 1 grey; 2 white; 2 grey; 1 white; 1 grey; 2 white. Total 60 threads to pattern. Weft 73 picks dark green mixture; 1 pick blue and brown twist.

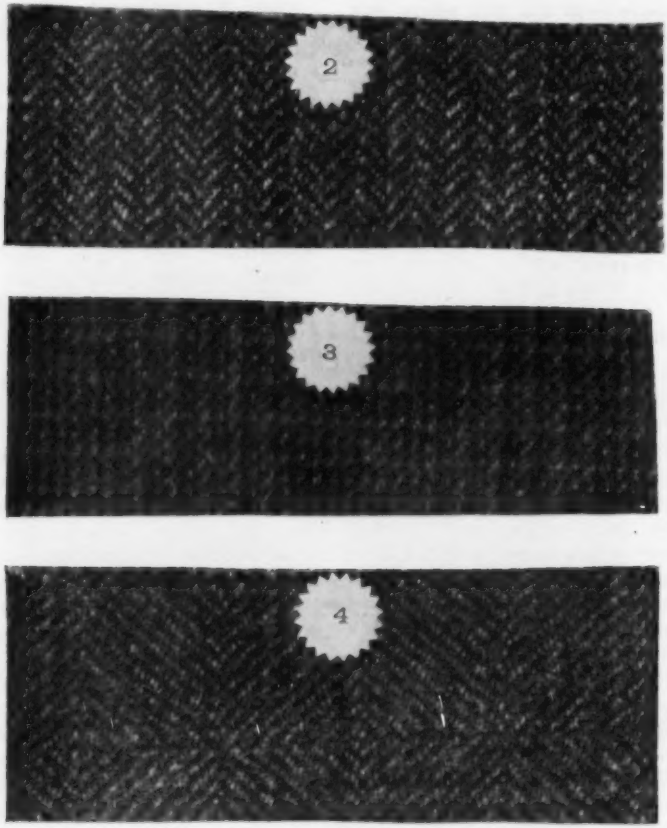
The finished cloth has about 36 threads per inch in warp and the same number in the filling.

The four end twill is again utilized for pattern No. 3, the warping and wefting being entirely different. This cloth is of better quality, being 60c. per yard, 6/4, weight 19 ounces. It has sold very well for the medium trade. Warping as follows:

One thread crimson and black twist (black is cotton); 2 white; 2 olive; 2 white; 1 olive; 1 crimson and black twist; 2 white; 2 olive; 2 white; 2 olive, 2 white; 2 olive; 2 white; 2 olive; 3 white; 1 olive; 1 white; 3 olive; 3 white; 1 olive; 1 white; 3 olive; 3 white; 1 olive; 1 white; 3 olive; 3 white; 1 olive; 1 white; 3 olive; 3 white; 1 olive; 1 white; 3 olive; 2 white; 2 olive; 2 white; 2 olive; 2 white; 2 olive; 2 white; 1 olive; total 80 threads to pattern. Weft same as warp.

This fabric contains about 44 warp and 36 filling threads per finished inch. Here again the white is really a white and grey mixture similar to what is used in the previous pattern, and the blending of the colors produces a very harmonious effect.

In pattern No. 4 we have quite a different effect still, this pattern being more elaborate, and those wanting variety of design can find it here. This really speaking is only the four end twill rearranged.



Warp: 3 threads white; 3 grey; 3 white; 3 grey; 3 white; 1 blue and white fancy twist; 2 grey; 3 white; 3 grey; 3 white; 2 grey; 3 white; 1 grey; 2 white; 2 grey; 2 white; 2 grey; 2 white; 2 grey; 3 white; 1 grey; 2 white; 2 grey; 2 white; 2 grey. Total 56 threads in pattern.

Weft: 2 picks green; 3 olive; 3 green; 3 olive; 3 green; 1 blue and brown twist; 2 olive; 3 green; 3 olive; 3 green; 2 olive; then 2 picks green; and 2 picks olive for 36 picks.

We could send a dozen different shades for each of the above patterns. Being spun fairly coarse, say about 12 skeins, and made of rather low stock, and not being cut very close, the fabrics, although lightly wefted, handle well.

Care should be taken in finishing not to cut too close, otherwise the cloth will present a raw appearance, and instead of attracting buyers, will repel them. There is as much art in finishing this class of goods as in any class, and care should be taken both in milling and finishing.

The Ring Frame Thread Protector.

The protector introduced by the Ring Frame Thread Protector Co., Amsterdam, N. Y., has now been in use in a number of mills for a considerable length of time and has been subjected to a severe test in actual mill work, and the manufacturers are now able to refer to mills who have used this device continuously and found it to give excellent satisfaction.

Our readers are already familiar with the construction of the separator and the principle upon which it works. The claims made on its behalf may be summarized as follows: A larger production of better quality yarn; saving of floor space and cost of machinery; economy of labor, power and repairs.

The saving of floor space and machinery is the result of the increased length of the traverse and reduced gauge of the spindles. A uniform tension is maintained on the yarn and consequently it does not suffer the damage resulting from striking forcibly against the separators. This enables the machinery to be run faster with less breakage of ends. Comparative tests were made in four mills with frames having this thread protector and others with the ordinary separator. The results of these tests shown in the following table indicate an increase in speed of about 16 per cent. in favor of the frames having the thread protector.

	THREAD PROTECTOR.		SEPARATOR	
	REVOLUTIONS Front Roll.	Spindle.	REVOLUTIONS Front Roll.	Spindle
Mill No. 1	130		112	
Mill No. 2	181	5450	155	4700
Mill No. 2	130	7700	112	6600
Mill No. 4	130		112	

The saving of the yarn enables much longer stock to be successfully spun, and the builders state that cases have been found where material which it was impossible to spin otherwise was handled successfully with this protector.

The reduction in the number of doffs enables a greater production to be obtained. The builders state that by actual test in one mill, 50 per cent. less travelers were used on the frame with the protectors than without. This saving of travelers is due to the reduction of friction on the rings and travelers, owing to the travelers being held in a perpendicular position.

The following letters are from mills where the separator has been in use:

Atlanta, Ga., August 19, 1901.
Ring Frame Thread Protector Co., Amsterdam, N. Y.

Gentlemen:—Replying to yours of the 13th instant, beg to say that so far we are thoroughly well pleased with the Thread Protectors now in use in our factory. It is, perhaps, sufficient to say that we are running our front rollers, on No. 10 hosiery yarn, successfully, and without the least bit of trouble get 190 revolutions per minute, at least 10 per cent. faster than we could possibly do with any degree of success without the use of the Protector. This proportion of increase has been made throughout the factory. Further we use a very much lighter traveler, at least three numbers.

In many other respects we consider the Protector a very great improvement over the separator.

Yours very truly,
ELIZABETH COTTON MILLS.

Lowell, N. C., August 17th, 1901.
The Ring Frame Thread Protector Co., Amsterdam, N. Y.

Gentlemen:—Have two frames with your Thread Protetors, one in the Lowell Cotton Mills and one in the Spencer Mountain Mills: we have watched the results very carefully at both mills and are very much pleased with same, so much that I have mailed you an order for full equipment for Spencer Mountain Mills, and will soon place order for Lowell Cotton Mills.

I consider that you have by far the best thing on the market in the way of a separator, or Thread Protector.

It has many advantages over other separators, viz:—Runs higher speed, gives an evener tension on the thread, winds tighter bobbins, with two to three numbers lighter travelers, consequently saving travelers, rings, and waste, and many other points not mentioned.

I cheerfully recommend your Protectors to my friends.

Yours truly,
SPENCER MOUNTAIN MILLS.

The Right to a Trade Name.

We wish to call the attention of our readers to a decision made in the United States Circuit Court for the Northern District of California, in which a perpetual injunction is ordered in the case of the use of the name Babcock & Wilcox, in connection with the sale, or offering for sale of steam boilers, or other steam apparatus not manufactured by the builders of the well-known Babcock & Wilcox boilers.

It is a matter of congratulation that this position has been taken by the court. The value of a machine or process to the inventor consists in a great measure of the name with which the public connect the apparatus or process. If liberty were given to anyone that desired to appropriate the name which the public have learned to associate with the invention, it would be equivalent to annulling to a large extent our patent laws.

An improvement of a machine or process must not only be invented, but it must be applied and introduced to the trade, and this often means large expenditure of money and many years of patient labor. During this time the public learn to associate the process or machine with a certain name. It would be the rankest injustice to allow others, who have no right whatever to the improvement or process itself, to apply the trade name to a competing device or process. The decision reported will do much towards preventing this abuse.

—If we were others, how much better we would do than they.—Arnaud.

An Improved Twister.

The accompanying illustration shows a new yarn twister, recently put on the market by the Howard & Bullough American Machine Co., Pawtucket, R. I.

This machine resembles closely in its construction their improved spinning frame, description of which was recently given, and contains many of the improvements embodied in that machine. The framing is built from low models and of very heavy pattern, designed specially to prevent any vibration, thus ensuring light running, preserving the spindles and reducing the cost of repairs. All of the different parts of the machine are turned, milled or planed, and wherever two working parts come together they are tongued and grooved. All parts being exact duplicates are interchangeable.

The spindle rails are of the heavy box pattern specially designed to prevent any liability of springing or twisting. Outriggers for supporting the driving pulleys are supplied as shown in the illustration, and are usually placed at the head or gearing end of the machine.

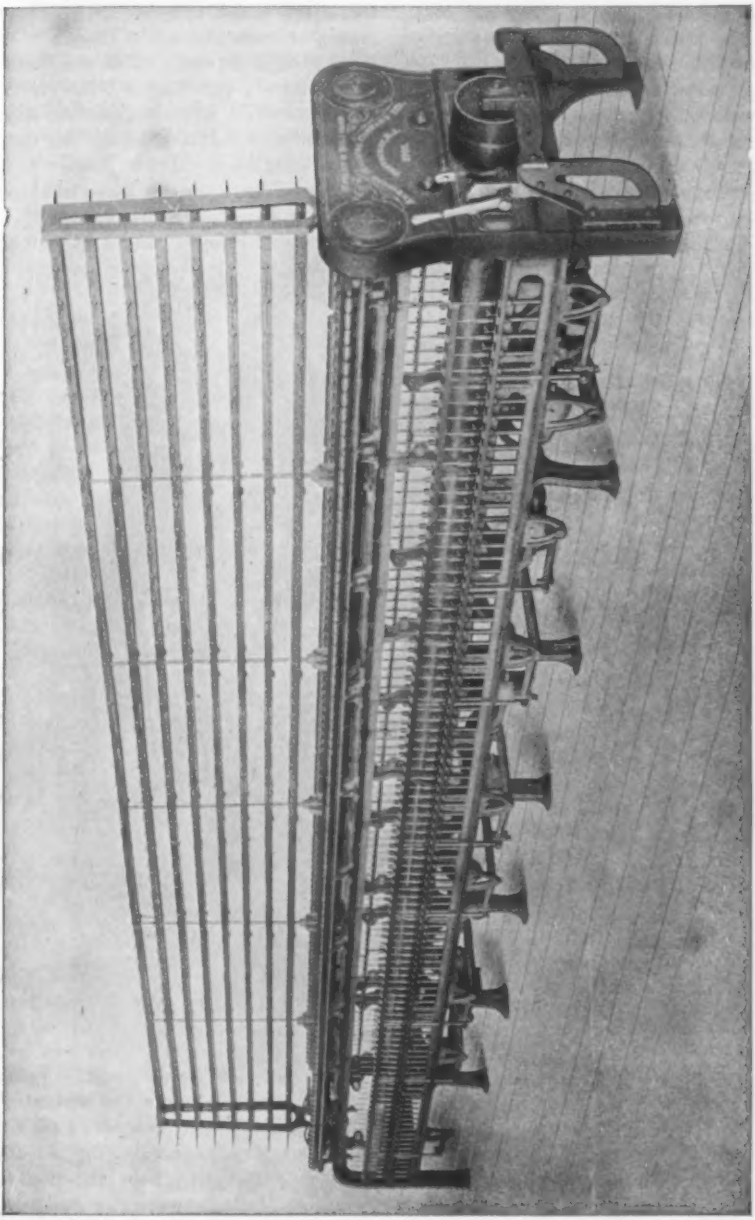
The tin cylinders are made from specially heavy blocked tin. Cylinder shafts are of steel provided with Woodruff patent steel keys. Cylinders are thoroughly tested before leaving the shop. The cylinder bearings are of phosphorus bronze and are all of the self-oiling type, thus ensuring thorough lubrication. Any of the improved modern high speed spindles can be furnished with this machine. Knee brakes for the spindles will also be supplied when so specified.

By means of a simple device applied to each spring piece or samson, any unevenness in the floor is easily overcome, thus rendering any carpenter's work unnecessary. The foot of each samson is provided with an adjusting shoe and jack screw.

These machines can be built for either dry or wet twisting. When for wet work the bottom and top rolls are

shirted with brass and a brass trough is provided to hold the water. The yarn is submerged in this trough by means of a glass rod which can easily be raised or lowered.

The machines are built with either single line bottom rollers and single line top rollers, or with double line bottom and single line top rollers, according to the requirements of the



A NEW YARN TWISTER.

purchaser. Ordinary arrangements call for the creels for two to four ply, but creels can be furnished for any ply required.

For certain work the frames can be run at a low enough speed to allow the use of a common type of spindle. This frame, however, is designed particularly for high speed and large productions, every part having been carefully calculated with this end in view. The manufacturers' aim has been to strengthen all parts of the machine to stand the service called for today. Any further information regarding these machines will be cheerfully furnished on application to the builders.

Cotton Manufacturing in Canada.

The protective tariff system now in operation in the Dominion of Canada which was designed to foster Canadian manufactures has not produced very great results along the line of textile manufacturing during recent years, although the cotton manufacturing industry has reached considerable proportions and Canadian manufacturers pride themselves on the high grade goods which their mills are now turning out.

Raw cotton under the Canadian tariff is admitted free of duty while there is a high tariff on manufactured cotton goods, but, notwithstanding this fact, Canadian manufacturers claim that they have to compete with some of the larger mills of the New England States, who, when they have a large line of goods to close out at a price sooner than throw them on the home market at a cut price which would tend to disturb existing conditions will send them across the line at a price which makes it possible for the Canadian jobber to pay the duty and still undersell the home market on similar grades of goods; in other words, they claim that American manufacturers use the Canadian market as a dumping ground for their surplus product.

The cotton manufacturing mills are controlled by three distinct corporations and these three comprise practically all of the cotton mills in the country, with the exception perhaps of a few small mills of little importance scattered here and there.

The rapid advance in cotton manufacturing in the United State is in sharp contrast with sluggish development of this industry among our Canadian neighbors. The increased cost of laying down the raw material at the doors of Canadian mills is more than offset by the lower wages prevailing in Canada, at least as compared with wages in New England.

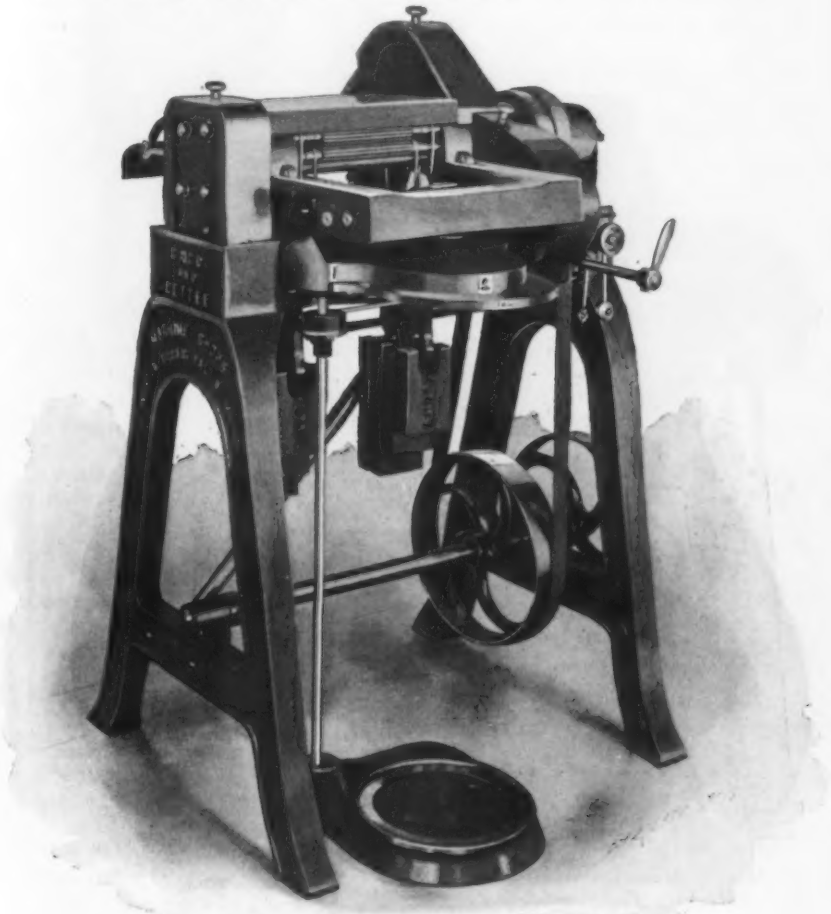
The explanation of this difference in the growth of cotton manufacturing, in the two adjacent sections is found in the lack of markets. The Canadians are able to manufacture cotton goods at as low a cost as New England manufacturers, but they cannot sell the goods. The domestic market is small and the protective tariff of the United States bars them from that rich field. A protection that protects and a wider market for their goods are what the Canadian cotton industry needs to give it prosperity.

—The extent to which people in England are worked up over American competition is well illustrated by a reference made in an English journal to our exports of cotton and manufactured cotton goods. This journal calls attention to the fact that in the last fiscal year our exports of raw cotton were fifteen times as large as the exports of manufactured cotton goods, and that in July, 1901, the corresponding ratio was only 4 to 1. This would be a rather startling statement if it were not for the fact that in the month of July our exports of raw cotton are at their lowest point, it being the month just before the arrival of the new crop and after most of the old crop has been exported. The American manufacturers hope in time to make the ratio between raw and manufactured cotton exported even less than 4 to 1, but it will take many years to bring about this change.

Improved Railway Head and Drawing Frame.

The accompanying illustrations show the new railway head and drawing frame built by the Saco & Pettee Machine Shops, Newton Upper Falls, Mass., and Biddeford, Me.

As originally used in connection with the old-style top flat cards, the process. In case one or more slivers should break down at the cards, the evening mechanism operated to reduce the speed of the front roll, and when the slivers were again pieced up, operated in the reverse direction, increasing the speed of front roll again to compensate for the change in amount of stock fed into the rolls at back.



AN IMPROVED RAILWAY HEAD.

functions of the railway head were:

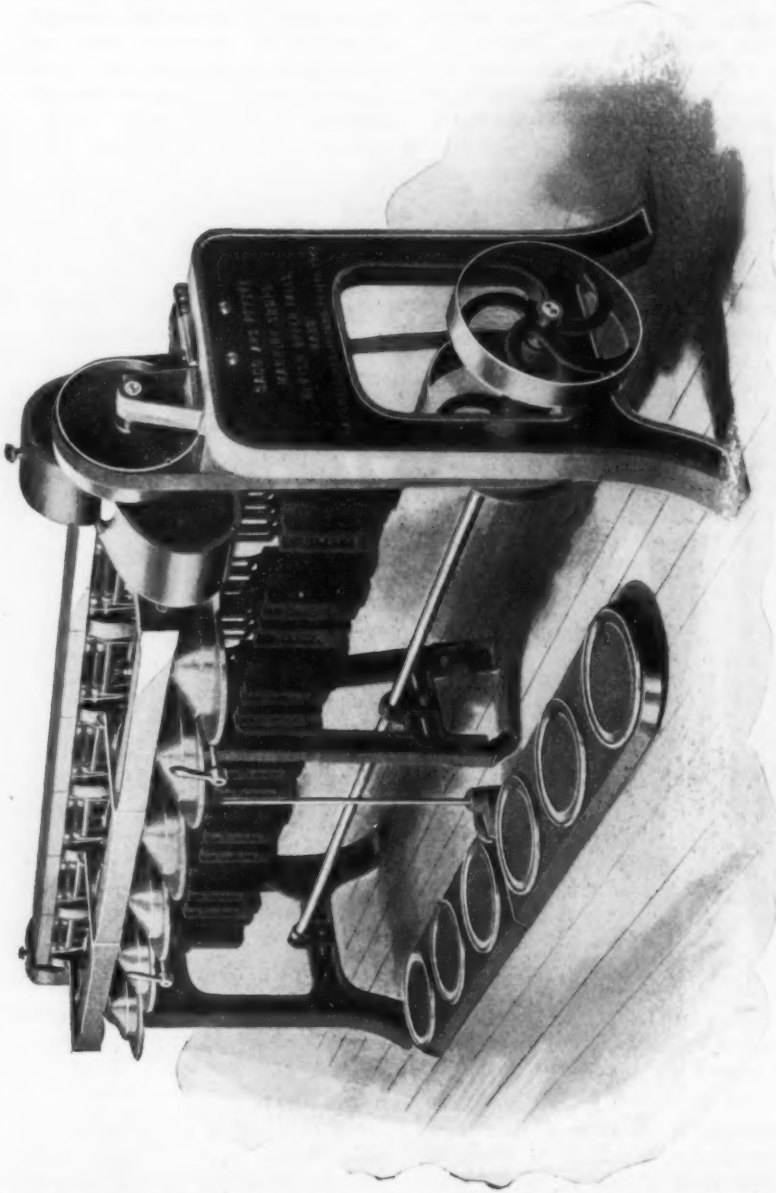
To take up a number of slivers directly from a line of cards, draw them to a single sliver of a given weight and place the product in a can for convenient use on subsequent

The card doffers and railway head being driven from the same shaft, the relative speeds were of necessity maintained to enable the railway to take up the slivers at the rate given off by the doffers. Thus the back

rolls were not available as eveners, and the evening mechanism had to operate through the front roll.

Many experienced mill men have such a high opinion of the railway head that they employ it in connection with the modern revolving flat card, taking up the slivers from the card cans, instead of from the old card trough or apron.

Practically all that was necessary to adapt the old-style railway head to take the slivers from the cans was to add a back-stop motion and sliver



AN IMPROVED DRAWING FRAME.

guides, the same as on a drawing frame.

Although there has been a steady demand for this re-adapted old railway head, it has been apparent that a machine much better suited to modern requirements could be designed, and the Saco and Pettee Shops have now placed on the market a railway head which is the result of much careful study of the practical working of the old machines in the modern mills. It is designed to even up much slighter variations of sliver than could possibly be handled on the old machine, the evening mechanism of which was cumbersome, complicated and difficult to keep in order. The cone or evener belt practically taking the whole load of the machine, it was impossible to make changes of speed accurately or delicately enough through the front roll to take care of a variation of only a few grains in the sliver.

By the application of a back stop motion to prevent singles going up at back, the back roll at once becomes available as an evener, thus enabling the workmen to even the sliver as it goes into the back roll, instead of attempting to even it as it comes out at the front roll. The new evening mechanism is placed on the table or roller beam and is connected through the regular crown and draft gears with the back roll.

There is no load on the evener cones except the driving of the back rolls, no belt to slip at starting and cut the work every time the end is pieced up.

Among the other features to which it is desired to call attention, are the following:

No complicated mechanism beneath the roller beam or table to confuse the help, and unskilled help can be trusted to run these machines as easily as to operate the same number of drawing frames.

The top rolls are weighted separately and independently at each end, thus avoiding the uneven weighting of the rolls incident to the use of the multiple lever.

Front and back stop motions are provided, also full can and roller lap stop motions, which are positive in their action.

The whole machine is constructed to operate at an increased speed, giving a production of 25 per cent. more than on the old machine, and at the same time produces a much more even sliver.

Doubling 8 into 1 a sliver has frequently been produced varying only one grain in thirty weighings, two yards to each weighing.

The standard head is made to double 8 into 1 unless otherwise specified when ordering. It is so arranged, also, that any number of heads, from one upwards, can be embodied in one continuous frame. Each head being provided with tight and loose pulleys, stop motions and shipper, remains entirely independent of the others in operation.

Either leather-covered or patent metallic rolls are used.

During the last few years the Saco and Pettee Machine Shops have given special attention to the development of the drawing frame, resulting in many improvements in design and construction, making the frame much more convenient to handle, more durable, better adapted to the various lengths of staple, and to give a larger production with less waste.

The main objects of the drawing frame are to double a number of slivers varying individually in weight per yard, and draw them into one even sliver with the fibres laid as nearly parallel as possible.

To obtain this result it is necessary to handle the comparatively uneven slivers from the card cans as delicately, yet as positively or firmly as possible, avoiding undue tension between the card can and the back drawing roll, and to draw them progressively and evenly through the four lines of rolls, delivering a sliver

without kinks or bunches through calender rolls and coil it uniformly in cans.

Stop motions must be provided to stop the frame in case a sliver ceases from any cause to go through the rolls in a proper manner, also when any can is full.

Each of these important details has been the subject of long and costly experiments both in the Saco and Pettee shops and in many different mills using about all the various grades of cotton, and Saco and Pettee Machine Shops have now succeeded in producing a frame which the builders believe to be as well adapted to all grades of stock as any frame on the market. This improved frame is shown in our illustration and among its advantages are the following: Improved roller stands; patent end gear stand; improved calender rolls; patent sectional coiler gear covers; improved stop motion spoons; calender roll covers and top clearers.

Purification of Scouring Liquor and Recovery of the Grease.

The methods for recovering wool grease from scouring liquor and purifying such liquor that have heretofore been tried have been accompanied with such difficulties as to practically prohibit their general use. These processes have been based on either a chemical or a combined chemical and mechanical precipitation. The amount of grease still remaining in the liquor after having been treated by any of the old processes has been so large, that the waste liquor could not be run into the rivers without polluting them.

A test made in a well equipped plant where the liquor was purified by cracking with sulphuric acid gave the following results:

Grease recovered	54%
Grease lost in waste liquor	20%
Lost in pressing cakes of grease	17%
Unaccounted for	9%
Total	100%

According to this test nearly 30% of the total grease escaped to the sewer.

The better purifying of scouring liquor became a necessity in Bradford, England, where an immense quantity of greasy wool was scoured in a thickly populated district. As the old methods were not available, experiments were made with a system based upon evaporation. The only objection to this method was the expense of evaporating such large quantities of liquor, so that the solution of the problem depended upon the discovery of some rapid and cheap means of evaporation.

The system of evaporation adopted in sugar refineries and other works where it is necessary to evaporate on a large scale was adopted, and, after the waste scouring liquor had been condensed by evaporation, the remaining three ingredients, wool fat, soapy liquor, and earthy matter, were separated by a centrifugal machine, such as is used in separating cream from milk.

The system of evaporation adopted is known as the "Yaryan," and its general features consist of the use of successive boilers into which the liquor to be evaporated is introduced in the form of spray. The advantage of this method consists in the fact that the weight of the liquor does not raise the boiling or evaporating point, as is the case when heat is applied to the bottom of a deep tub filled with the liquid to be evaporated.

In the first boiler live steam is introduced around tubes through which the waste scouring liquor is passing in the form of spray. As this liquor passes from the boiler, the vapor and unevaporated portion are separated in a special apparatus. The unevaporated liquor then passes into the second boiler in the form of spray as before. The vapor is used in the second boiler in place of the live steam, and, as a vacuum is maintained inside the tubes, the evaporating point is lower and the heat of this vapor is sufficient to continue the process of evaporation.

This process is carried on in successive boilers until the proper degree of condensation is reached. The vacuum is maintained in the second and succeeding boilers by means of a powerful air pump.

An ordinary steam boiler evaporates 8½ lbs. of water per pound of coal. By the "Yaryan System" 16 lbs. of water will be evaporated with two boilers, 23½ lbs. with three, 30 lbs. with four, and 37 lbs. with five boilers, for each pound of coal consumed. It is this greatly increased efficiency which adapts it so well for purifying waste scouring liquors.

From the last boiler, the thick liquor is conducted to the centrifugal separator already mentioned. In this centrifugal machine, the sand forms a continuous wall next to the rim of the basket; the wool fat forms a wall on the inner side of the liquor in the basket; the centre between the two contains the soapy and potash liquor. The machine is run until the accumulation of sand blocks the potash outlet, when it is stopped and the sand removed.

An analysis of this sand shows the presence of but 9% of greasy matter. An analysis of the wool fat gives the following result:—

Wool fat 94.7%
Other matter 5.3%

Upon boiling this product and allowing the liquid to settle, a wool fat of 99½ per cent. of purity is obtained, which contained less than 1 per cent. of fatty acid. Its viscosity was 1.167 at 153° F., and 31/100 at 212° F., or 11 times and 4 times that of refined tallow at the same temperature.

The potash liquid taken from the centre wall of the liquor in the separator is run into a tank, and at the close of each day is run through the evaporating machine and concentrated further, after which it is calcined. The product of the furnace is a greyish white ash containing from 50 to 75 per cent. carbonate of soda, the quantity varying with the conditions of the wool. The hot gases from this furnace are carried to the boiler flues and assist in generating steam.

The condensed water from the evaporators is recovered and used again for scouring succeeding batches of wool. It is free from soap destroying ingredients and contains a percentage of ammonia. The first trial of this system has been on a very large scale and the success attending it has been so great that the process is now being introduced generally. Machines are made for operations on a smaller scale.

There are doubtless many manufacturers in this country who would be interested in further investigations of this process. The system is controlled by the Wool Products Recovery Co., Bradford, England, and they are represented in the United States by the Yaryan Co., Times Building, New York, where further information may be secured.

—The per capita value of woolen goods imported yearly into Canada is more than ten times as large as imports of woolens into the United States. These heavy importations are ruining Canadian woolen mills. Following are the figures for both countries:

	Population.	Woolen Imports.	Per capita.
Canada,	5,185,000	$9 800,000	$1.89
United State-,	76,000,000	14,220,000	.18 7/10

Our imports of woolen goods at the Canadian rate per capita would amount to $143,640,000 per year. At high water mark under the Wilson tariff law our woolen imports reached but $49,740,000, and yet as a result, the industry was prostrate. Yet our imports then per capita were but a little over one-third of the present Canadian rate. How long could our woolen mills stand such an avalanche of foreign goods as is now burying the industry in Canada?

—Among honorable men promises are debts: among politicians they are baits.—A. Tournier.

Memoirs of a Veteran Wool Carder.

VI.

The owner of the Pascoag (R. I.) Mills, where I once worked, was very sensitive about the fancies throwing stock. It seems as though that was all he looked for when he came around. I pleased him very much in this respect and he did not like to see me going to the Weybosset Mills, where I had accepted a position. After I left, he asked me many times to return.

At the Weybosset I set up 12 sets of new cards in the new mill and took charge of them. When I arrived at this mill on the first of June and reported ready for work, Mr. Waterman, the superintendent, told me the roof was not yet on the mill and would not be on for a month. He said:

"Your time, however, will go on from today just the same as if you were at work."

There were 12 sets of cards, four cylinders to a set, equipped with Platt's balling machines, Apperly & Bramwells' feeds. In just 12 weeks from the time we started to set up the 12 sets all of them were in operation. The carder in the old or No. 1 mill, as it was called, which contained 25 sets, had always been in charge of the picking room, with another man under him as second hand. Two days after the first set was started, the superintendent came to me and said:

"Sam, that five run warp coming from the new cards is not good, it is very weak."

"Well, it is good for the stock that it comes from."

"Why," he exclaimed, "that stock is X X Ohio fleece, the best we can buy."

"Come over to the feed and look at it. It looks like fall California, it is so short. There is something wrong with it. You make up another lot just like it and if I can't make good warp out of X X Ohio, you can settle up with me."

"All right, I will get another batch ready for you."

After this conversation I went into the picking room for the first time and asked the second hand how he picked that lot of X X Ohio for me (it was blue and white mixed, half and half).

"I went according to orders from the boss," he replied. "I took a sheet of blue and then dumped a sheet of white on top and so on, blue and white, until the whole batch was mixed. I then put it through the cone duster, Belgian bur picker, and after that I put it eight times through the mixing pickers."

"Well! well!" I exclaimed. "It is no wonder it looks like fall California. I am going to have another lot made up like the last one and as soon as you get the stock, I will show you how I want my lots picked."

When the wool for the next batch reached the picking room, I called the twelve men together (this was six men more than was needed), and explained to them how I wanted my lots mixed. I took up all the spare room in the picking room and lined the men in a row around the batch. Each one had an armful of wool and sprinkled each color carefully over the pile as it should be done. That saved five or six times picking. The men were all amazed.

When I had the batch about half mixed in comes Mr. Boss Carder of No. 1 mill, wearing his white shirt, high standing collar and white vest. He came up to me and said:

"How do."

"How do," I replied.

"What is all this fuss about over this lot?"

"It is none of your business," I answered. "You attend to your own room and I'll attend to mine."

Well, he went off in a huff and in a little while brought the "super" and showed him what I was doing. The "super" told Mr. Boss Carder from No. 1 that I must have my own way with my batches. This meant that the boss picker had two bosses over him.

We finally got the batch mixed, and then we ran it through the cone duster and bur picker, and afterwards twice through the mixing pickers. You ought to have seen the difference in the two lots. I got it on the cards as soon as possible, and when it reached the mules the boss spinner had to speed up his carriage and take out hole after hole of twist. While it was running on the mules I went up to the spinning room and said to the boss spinner:

"Joe, how does the new lot go?"

"Goes right along. It is so strong I can hardly get the mules out quick enough."

Soon after I saw the "super" and said:

"How does the new lot go?"

"It is the best and strongest yarn ever made in this mill."

The boss picker got orders from the "super" to pick and mix all batches for both mills just as this one had been mixed, and from that time on, there was good yarn and strong yarn at the Weybosset.

The object of picking is to obtain good blending, open the stock and at the same time save the staple. We made a good deal of 13 run red yarn for second spinning. It ran badly, although it was made of fine Australian wool. I asked the "super" one day to get me a special lot, and said, if he would, that I would try and make the 13 run yarn at first spinning. He had a special lot sorted. I ran it through the mixing picker twice and then got it on the mule and spun it as fine as they wanted it, 12 run, and it spun well. (This is on record today in the Weybosset Mills and any one can verify this by asking the present boss, Joe Budrow.) This was all done by saving the staple in the picking room.

Another trouble with carders is carelessness in putting on oil, emulsion, or whatever they use. The men will slap it on from a dipper, or pail, or with an old broom in any old way. Even in first class mills it is surprising how careless and indifferent carders are in picking and preparing their stock. If the stock is not mixed, picked, and oiled as it should be, it will not go right in the mill.

After three years at Weybosset, I had saved a few thousand dollars and left here to go into the shoddy business. I bought a garnett, rag pickers, cards, etc. Things did not go my way and after two years I went carding again, with a good deal less money than when I left off, but with more experience in the shoddy business.

SAM DRIVER.

(To be continued.)

Treating Ramie Fibre.

A resident of Stuttgart, Germany, has secured a patent, (728,498,) in the U. S. for a process of preparing ramie. He states that the invention relates to improvements in the treating of ramie fibre in order to render it fit for the manufacture of shirts and other articles of wearing-apparel. By this treating of the fibre it is deprived of gummy matter and loses its brittleness.

For this purpose the ramie fibre is treated in the vacuum by means of soap, soda, (Na_2Co_3,) glycerine, and pumice until all brittle substances are removed. The amounts of the ingredients are about as follows: 220 lbs. of the dried ramie fibre 22 lbs. of soap, 44 lbs. of soda, (Na_2Co_3,) 22 lbs. of glycerine, and 2¼ lbs. of pumice. These substances are mixed with a sufficient quantity of water free of lime, and the mixture is boiled about twelve to sixteen hours. After that time the fibre is dried and then again drawn through a five-per-cent. solution of soap, while any particles of wood are removed by means of a five-per-cent. solution of sulphuric acid. The object of the pumice is to loosen the fibres by direct friction. By treating the ramie fibre this way the fibre now free from gummy matter becomes very hygroscopic, the shirts made of it gaining a high hygienic quality.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market.

Interested parties are referred to the manufacturers for further information. These items are published without charge and regardless of advertising consideration, the idea being to present to our readers a systematic monthly record of new machinery, etc. of interest to textile mill men.

We invite machine builders and others to send us such information for this department.

Chain for Power Transmission.

The Morse Chain Co., Truemanboro, N. Y., are putting on the market a chain for power transmission, for use in rooms where the conditions are unfavorable for belts and other methods of transmission.

Process for the Purification of Waste Scouring Liquor.

The Yaryan Co., Times Bldg., New York, are introducing into this country a machine and process for purifying wool scouring liquor and reclaiming the waste product. This process is now used in a successful way on a large scale in England. A description will be found in another part of this issue.

Cop Builder.

A. E. Heipt, Forst, Germany, has invented and is introducing into European mills a device for cross binding yarn on cops. It is claimed that the attachment gives a much harder cop, which will stand severe handling without breakage.

Loom Picking Motion.

The Saxony Loom Co., Chemnitz, are introducing a loom picking motion, which is operating by gears instead of cams.

Snarl Catcher for Spinning Machines.

Arnold Stossel, Wien, Austria, is putting on the market a snarl catcher for ring spinning machines. It has been used in English mills for a number of years and given good satisfaction there. The device is illustrated and described in another part of this issue.

A Cold Steam Engine.

This is the name given to an engine which has an auxiliary apparatus for utilizing the exhaust steam. A compound type of this engine is now in operation at the Technical High School of Charlottenburg, Germany. A description will be found in another part of the Textile World.

An Improved Heilmann Comber.

Asa Lees & Co., Oldham, England, are putting on the market an improved comber built on the Heilmann system.

Steaming Machine.

The Curtis & Marble Machine Co., Worcester, Mass., have made several changes in their steaming machine. The principal features of the new machine are an increase in the diameter of the cylinders and brushes and an improvement in the clutches.

Hopper for Northrop Loom.

The Draper Co., Hopedale, Mass., have brought out an improved hopper for the Northrop loom, which is said to be a great improvement over the one heretofore in use.

New Fabric for Toweling.

Harry W. Smith, Worcester, Mass., has invented and patented a new fabric, made with a leno weave, for towels. It is described in another part of this issue.

A New Heddle.

The Steel Heddle Mfg. Co., 1842 Germantown Ave., Philadelphia, Pa., are putting on the market a heddle made from one piece of steel, with no twist in the eye. Patents have been allowed for this heddle, which is said to be cheaper than the imported article.

Improved Knitting Needle.

Ernest Beckert, Chemnitz, Germany, is putting upon the market an improved latch needle for knitting machines.

The improvement consists in fastening the rivet by an electrical process. It is claimed that the new needle is much more durable and that the rivet does not easily become loose.

The Steam Turbine.

Improvements in the methods of using steam for power have since the time of Watt been confined to changes in the mechanical appliances for utilizing steam power by expansion behind a piston. The wastefulness of this method is well known, but all efforts to improve upon it have heretofore been unavailing.

Of all the machines brought forward as substitutes for the piston engine, the steam turbine has been the most promising. In principle and even in type it is not new, being in fact the first heat motor recorded in the history of steam engineering, as far back as 120 B. C., when Hero of Alexandria described an apparatus for utilizing heat energy. This apparatus, a reaction turbine, consisted of a spherical vessel mounted upon trunnions through which steam was admitted to finally issue from openings tangential to the sphere.

Many centuries later, in 1629, the Italian, Giovanni Branca, brought out the impact turbine, employing a jet of steam to impinge upon vanes or blades of a wheel. This latter, familiar to us in the hydraulic motors of the Pelton type, exhibits in general principle the characteristic features embodied in the present day De Laval steam turbine.

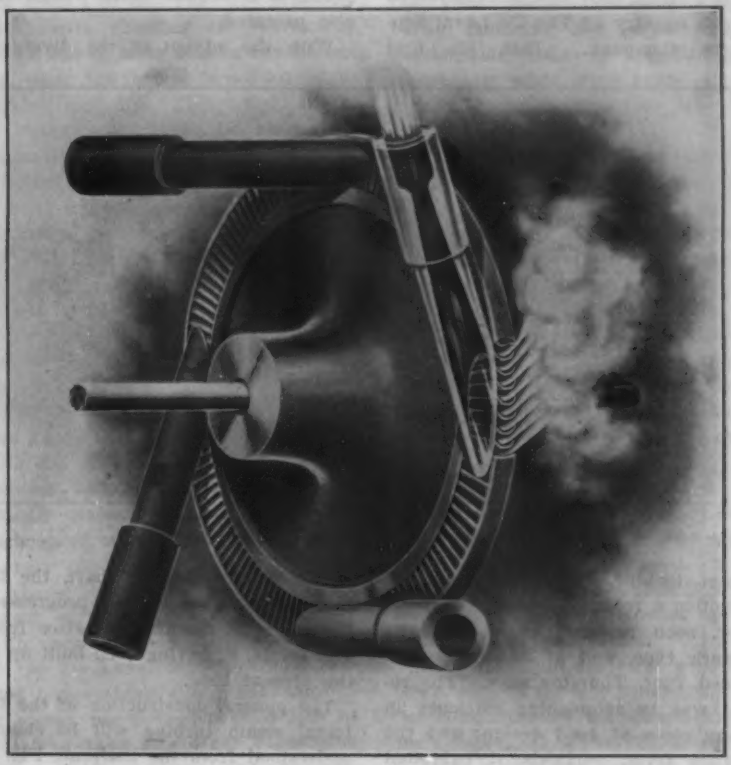


FIG. 1. THE DE LAVAL STEAM TURBINE.

Thus we see as early as 1629 the introduction of the reaction and impact turbine, although of imperfect form and not capable of practical application; all attempts at perfection along these lines have, until a comparatively short time ago, proven un-

successful; this was probably owing, however, to the interest aroused in the success of Newcomen in 1705, and later by Watt and his followers, in perfecting the reciprocating engine.

In 1883 De Laval made a successful steam turbine, using it in direct connection with the shaft of the well-known cream separator, manufactured in this country by The De Laval Separator Company. This, his first steam turbine, in design and construction a reaction wheel, was, however, soon replaced by one of the Branca type, and of the results attained Prof. Thurston says, "The result was an astonishing efficiency in many cases of good design; and the Branca form, particularly, exhibited such satisfactory qualities as constructed by De Laval for this use as to make it a permanent and standard addition to our list of prime movers."

However satisfactory as these results were, the steam turbine was yet very limited in its application and comparatively wasteful of steam, and to successfully compete with the reciprocating steam engine, it was necessary to introduce means for the complete expansion of the steam.

By use of the diverging nozzle, which he patented, De Laval secured a complete and adiabatic expansion of the steam and the conversion of its entire static energy into kinetic; and to overcome the difficulty of producing a wheel accurately enough balanced to revolve about its centre of gravity at a velocity sometimes as high as 1350 ft. per second, without causing a side pressure destructive to plain bearings and a rigid shaft, he produced a flexible shaft which was also patented.

With the advent of the diverging nozzle and the flexible shaft, the De Laval turbine has steadily progressed, thousands of machines in sizes from 3 to 300 H. P. having been built up to the present time.

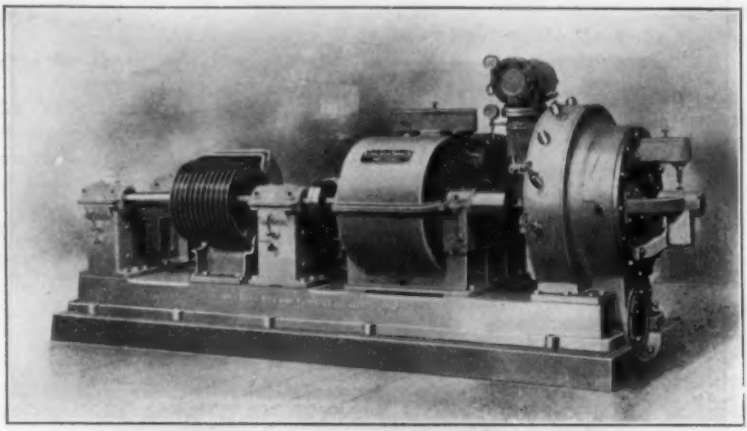


FIG. 3. THE DE LAVAL STEAM TURBINE.

The general construction of the De Laval steam turbine will be clearly understood from the halftone, Fig. 1, showing the different parts. The construction of the turbine, it will be seen, presents no extraordinary departure from everyday engineering practice. However, the workmanship and material used, owing to the high speed employed, must be of the very highest quality.

The turbine wheel is mounted upon a slender, flexible shaft, and in such position relative to the wheel case as to revolve entirely free, liberal space being allowed on each side. The wheel case and the wheel case cover are so shaped as to form "safety

bearings" around the hub of the wheel for the purpose of catching and checking its speed in case of an accident to the shaft.

The steam, after passing through the governor valve, enters the steam chamber, where it is distributed to the various nozzles. These, according to the size of machine, range in number from 1 to 12. They are generally fitted with shutting off valves, by which one or more nozzles can be cut out when the turbine is not loaded to its full capacity. This allows steam of boiler pressure to be almost always used, and adds to the economy on light loads.

After passing through the nozzles, the steam is now completely expanded, and in blowing through the buckets, its kinetic energy is transferred to the turbine wheel. After performing its work the steam passes into a chamber, and out through the exhaust opening.

The velocity of the turbine wheel and shaft, in most cases too great for practical utilization, is considerably reduced by means of a spiral gear usually made 10 to 1. Owing to the high speed of the engine the governor is very effective.

Among the claims made for the De Laval turbine is its high efficiency with variable loads. It is stated that in the De Laval steam turbine running non-condensing, the consumption of steam per horse-power is less at full load than any other condensing steam engine. Condensing, the efficiency is better than any compound condensing engine. Unlike the steam engine, however, the efficiency is nearly the same throughout its entire working range.

Fig. 2 is a perspective view of a 300 H. P. De Laval turbine. Many of these turbines are in successful operation. It is being built in Sweden, France, England and Germany, as well as in the United States. The American works are in operation and in readiness to fill orders promptly. Further information can be obtained by addressing the general office of the De Laval Steam Turbine Co., 74 Cortlandt St., New York.

"Hurricane" Yarn Scouring Machine.

It is quite an advantage in scouring yarn to be able to vary the duration of the process of scouring to suit the yarn under treatment. Some yarns, including the grays, require considerable time to cleanse them thoroughly, while other yarns can be scoured with ease in a very few minutes.

In the "Hurricane" Yarn Scouring Machine, here illustrated, the time can be regulated at the will of the operator. After the yarn has been tied into an endless chain by means of tie bands, it is immersed in the scouring liquor and carried up between the squeeze rolls, then down into the scouring liquor again, and so on alternately, until the operation of scouring is completed. But one handling is thus required during the process.

The scouring being completed, the yarn is next passed to a second bowl and frequently to a third one, where the yarn is thoroughly rinsed. A set of three bowls makes a most acceptable arrangement and satisfies the requirements of most dyers.

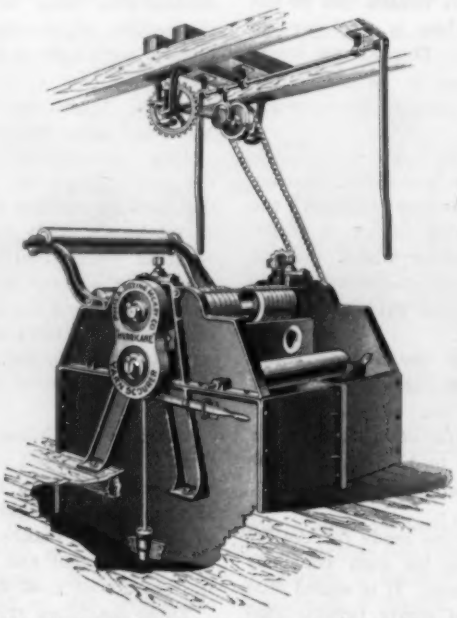
These machines are built with iron bowls and, in the one illustrated, the two compartments are independent of one another. It is possible, therefore, to scour a separate chain of yarn in each side of the bowl; or one-half of the bowl can be used in scouring and the other half for rinsing.

The builders also make single-bowl scouring machines, in which the capacity is just one-half of the double-bowl machines, as but one chain of yarn is scoured at a time.

Means are provided for changing the rubber rings about as they become worn and the wearing parts of the machine are designed so that they can be adjusted from time to time. The majority of the dye houses

usually require the upper roll only to be covered with rubber rings, but the lower roll can also be covered, if desired. Extra large valves of special design are used for draining the bowls and the machines are built in the most substantial manner as required for this heavy work.

The orders now being filled by the builders are probably the best proof that these machines are being appreciated by the practical dyer. Any other information will be furnished by the Philadelphia Drying Machinery Company, 6721 Germantown Ave., Philadelphia, concerning this scouring machine or their well known "Hurricane" dryers, which are especially built for drying and carbonizing yarn, wool, cotton stock, rags, etc.



"HURRICANE" DOUBLE-BOWL YARN SCOURING MACHINE.

Imported Glazed Cotton Yarn.

The process of dyeing, glazing and finishing cotton yarn results in an increase both of the weight and thickness of the thread. A recent decision of U. S. Board of Appraisers brings out the fact that it is the custom to retain the number in the gray to designate the finished yarn, although the actual number has been changed by the increase in weight.

A firm that had imported these goods protested against the assessment of duty in accordance with the number in the gray and on the weight finished, claiming that the bath number and weight when finished should be taken for this purpose.

The courts have recently affirmed the collector's decision overruling the protest of the importers.

—The more helpless we are to remedy an evil, the more sincerely do we appreciate its weight.—d'Houdetot.

—We have two ears and but one mouth. Nature thus teaches that it is better to listen than to talk.—Sterne.

—Everyone must either walk or run. He that stops is lost.—J. Simon.

—To dare think but half is to live but half.—Voltaire.

COTTON DEPARTMENT.

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Imperfections in Weaving.

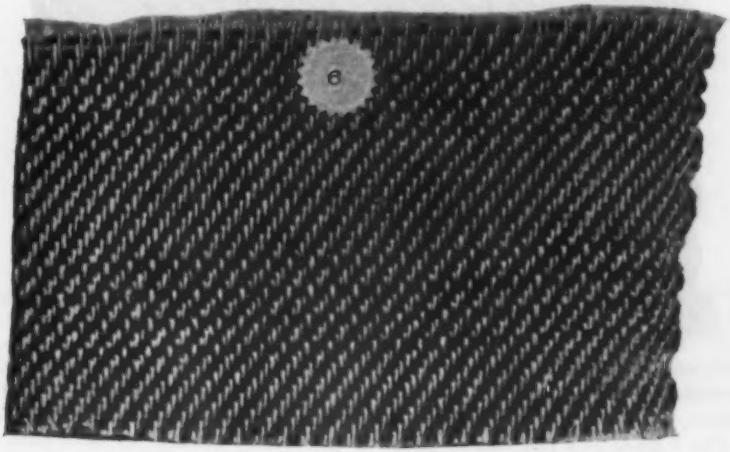
ARTICLE III.

ARTHUR DYSON.

Many of my friends in the weave room will agree with me when I say that one of the most troublesome imperfections to be contended with on such goods as sateens and Bedford cords is "kinky filling." At the same time I fancy that many of the men in charge of the "mule rooms" would be only too glad to hear that "kinky" cloth was a thing of the past; they are hardly ever free from either a visit from the overseer of weaving or a report from him complaining of the condition of the yarn, and its tendency to form "loops" on the surface of the cloth.

Sometimes the fault lies in the "mule room," and if such is the case, it is almost useless to try to weave perfect cloth, and the only remedy for the weaver to adopt is to get some new "filling" and use the other on goods which do not have a tendency to "kink."

I do not intend to enter into an elaborate explanation of the causes of these kinks, but at the same time I think that, if more of the overseers of weaving knew what was the cause of these "kinks" in the yarn, they would be in a better position to argue the matter with the overseer of the mule room. If the kinks come on the bottom of the "cop" the trouble generally

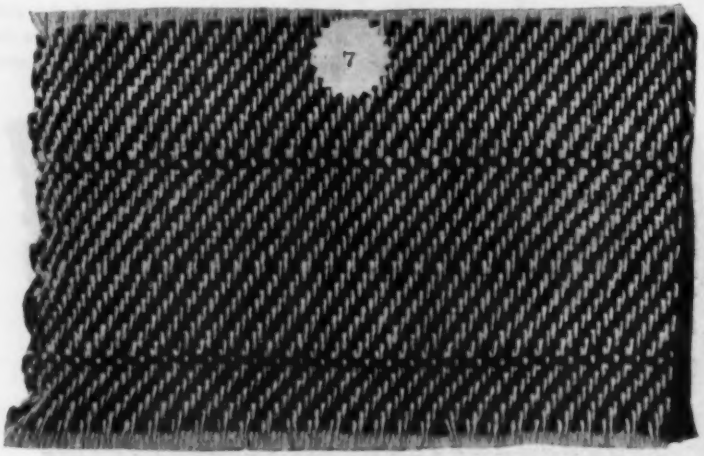


lies in the fact that the spinner has been afraid to get his yarn tight enough, owing to its tendency to snap when the cop is forming. Another cause is setting the "fallers" up too high. Another matter which is important, is the question of the carriage and spindles being in line.

One cause of kinks in yarn which cannot be blamed to the spinning room, is uneven roping. Twist will always run to the finest place, and therefore, if the roping is uneven, the twist will get into the fine places, form kinks and be wound upon the

cop in that manner. Single roping will also cause the same trouble.

Figs. 6 and 7 are illustrations of an imperfection, which completely condemns the cloth and is one of the most obstinate evils that the weaver has to deal with. These imperfections, commonly called "misspicks" or "mismatched patterns," are caused in two ways: either through some defect in the mechanism of the "Dobby Head," or through the carelessness of the weaver in starting up the loom, when through the failure of the weft, the loom has been stopped by the weft-



fork, and at the same time has not ascertained the position of the pattern chain.

Fig. 6 gives us a fair idea of the effect on the cloth of the first-named cause, and Fig. 7 is an illustration of the defect arising from the last-named cause.

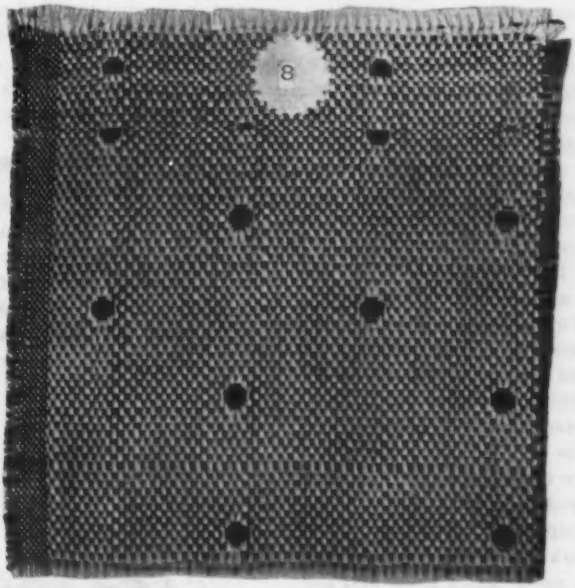
In the case of "misspicks" caused by the dobby, there are several causes which tend to produce them, such as: "pegs" missing from the pattern chain; the levers or latches failing to hook on properly when the knife is in position to receive them; and the binding of the latches so as to cause them to remain on the knife when otherwise they should remain clear of it.

About the best remedy which can be applied for the trouble arising from the pattern-chain, is to use the chain-bars which are furnished with a wire running lengthwise through each, and the iron pegs used in the chain having a groove cut in them, thereby allowing the person building the chain to "lock" them by means of the wire, thus insuring their permanent retention in the bar until the wire is again removed. Otherwise, there is no certainty of the chain being perfect, for, after a few days, the pegs are apt to work loose and drop upon the floor, the weaver will carelessly sweep them up with the dirt which accumulates around the loom.

For misspicks arising from the failure of the "latches" to catch onto the knife in their proper order there is only one remedy to be applied. It is the inspection, at least once a day, of the different looms in the room; whenever one is found that is making misspicks is should be fixed properly, and fixer should take the proper methods.

How often we find that the loom fixers do not know the least thing concerning patterns and pattern making, and when called upon by the weaver to attend to some defect of the pattern, will simply take a hammer or wrench, and deliver blows upon the delicate parts of the dobby which might more fittingly be applied to a

blacksmith's anvil: It would pay all overseers if they insisted on their help (loom fixers) having a latch-bender, see Fig. 9, with which they could raise or lower the latches as required.



These "benders" can be made at the mill. They are made out of 3/4 inch square steel, and are turned down at right angles on one end, and a slot put in the turned-down end, which enables the fixer to insert the end of the latch and thus bend it to either side. At the other end another slot is placed in the steel, which is used to bend the latch up or down. Of course the proper setting of the time of the head, and also the position of the knives when at their extreme throw, have a great deal to do with the proper working of the dobby.

There is much which might be said on the question of preventing the misspicks caused by the weaver, and shown at Figs. 7 and 8. Fig. 7 shows a misspick caused by the filling having been broken, as weaver has failed to reset the chain cylinder and the pattern does not follow its regular order. If a loom has a good brake, and it is in good condition, there should be very little difficulty from this trouble; at the same time the overseer should keep an eye on the

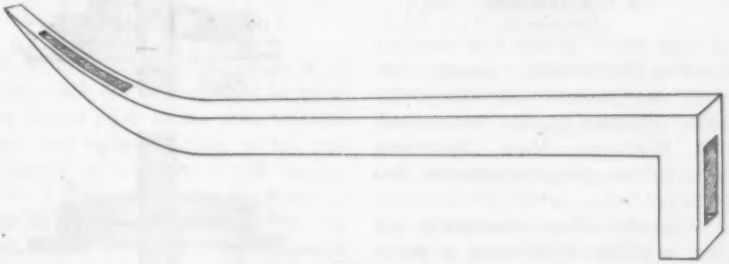


FIG. 9.

weavers who are engaged on work requiring a continuous pattern and impress upon them the importance of matching the patterns.

At Fig. 8 we find that the spots, which should alternate with each other, are broken up in one place, and in another place two spots follow each other in succession on the same part of the cloth, thus making a very serious imperfection. This has resulted from the weaver having a "pickout" and neglecting to see that the part of the pattern just woven corresponds with the pattern chain which has just passed under the levers. This trouble cannot be avoided by anything done to the loom.

There is a possibility that the misspicks shown at Fig. 7, will be greatly lessened, owing to the rapidly increasing use of the "Northrop" loom, with its filling changing mechanism and the feeler connected with it, which changes the filling bobbin automatically before the filling is entirely used up, thus reducing the possibility of such a misspick to the causes of the filling breaking, which is guarded against by using better stock and the best carding and spinning machinery. These "feelers" can be operated either by electricity or mechanical methods, and are a great improvement on the self-feeding loom.

(To be continued.)

A New Toweling.

A very clever invention in toweling known as the "Rubdry," recently perfected and patented by Harry W. Smith, president of the Wachusetts Mills, Worcester, Mass., has been placed on the market within the last month.

The peculiar effect embodied in this fabric is produced by using a heavy Egyptian novelty cotton filling in a leno weave. The nubs are thus held from pulling back and forth and the leno being a netting weave, gives the necessary pull desirable in towel effects.

In making these goods a Crompton cam loom is used instead of a dobby, as in the majority of leno weaves.

The borders consist of cable cord for filling and is handled by means of the box motion.

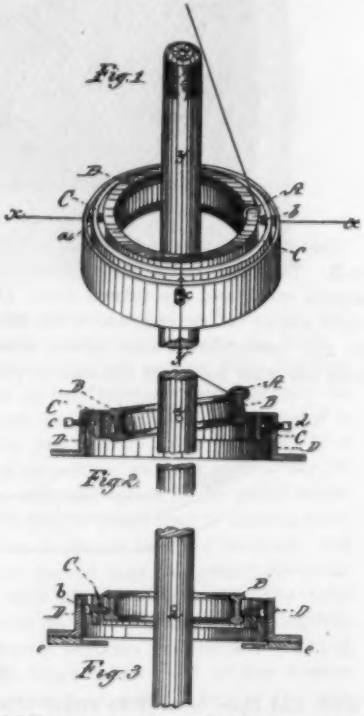
This combination gives a toweling perfect in construction and unlike any fabric for this purpose which has ever been produced.

The patents cover this country, England and the Continent.

A New Spinning Ring.

A device has recently been patented, which, it is claimed, will reduce the friction of the traveler upon its ring, equalize the tension of the yarn, and lay it upon the bobbin with greater speed without breaking.

A traveler-ring is connected with a



yielding support or holder in such manner that a gyratory motion is imparted to the former, which insures the desired tension of the yarn upon

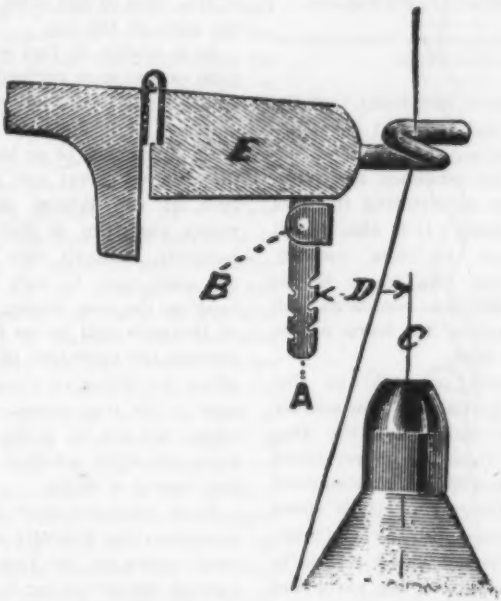
the traveler during the different stages of winding.

In the accompanying illustrations, A represents the traveler, free to traverse the upper rail of the stationary ring, B, which is pivoted to an outer ring, C, at points, a b, diametrically opposite each other, said ring, C, being pivoted to a stationary frame, D, at points, c d, diametrically opposite each other, the vertical plane passing through the points, a b, being at right angles or substantially at right angles to the vertical plane passing through the points, c d. The result of thus pivoting the rings, B C, is that each one is permitted to tip or rock on its pivot to one side and the other, and rises and falls by the pull or tension of the yarn on the traveler while forming the cop, the traveler rotating around the top rail of the ring, B, and its speed being increased without breakage of the yarn. The motion imparted to the traveler is similar to that illustrated by the gyroscope. The inclination of the ring, C, is limited by stops, e e, projecting inwardly from the bottom of the frame, D, or by any other simple device.

A Snarl Catcher for Ring Frames.

Much waste and imperfect yarn results from broken threads on ring frames catching on to and breaking the adjoining ends, which in turn may break down others. It is not uncommon for one broken end to break five or six more in this way.

To overcome this difficulty the device shown in the accompanying drawing has been invented. We understand that it is now in successful use in English mills and is being introduced on the Continent. It consists of the notched metal strip, A, which is fastened by a hinge joint at B to a piece that is screwed into the lappet, E.



Sufficient space, D, should be left between this piece, A, and the line of the spindle, so that the yarn will not catch on to it in the ordinary course of spinning; one inch for warp and seven-eighths of an inch for filling yarn has been found to be sufficient for this purpose. The piece, B, is adjusted to the right or left of the spindle, according as warp or filling is to be spun.

When the thread begins to snarl it

flies out and catches into the notched teeth in A, which prevents the end from interfering with the adjoining thread. If the lappet, E, is thrown back when doffing or putting on bobbins, the piece, A, swings on the hinge, B, and falls down by its own weight against the lappet, and does not interfere with the operator's hands.

It is a simple device, can be manufactured at a low cost.

Mule and Ring Frame Spinning.

CHARLES GEGAUFF, Mill Engineer.

Translated from L'Industrie Textile for the Textile World.

It is an accepted fact today that the ring frame is well adapted for spinning coarse and medium numbers; on these counts the tendency is; consequently, toward substituting the ring frame for the mule. It is also a well recognized fact in this country (France) that the ring frame is not yet able to handle fine counts as well as the mule, either for warp or for filling spun on cops.

The superiority of mule on fine counts is due partially to the smaller production per spindle on the ring frame, arising from the slower speed of the ring frame spindle as compared with that of the mule. High speed cannot be employed on the ring frame, because an excessive speed results in a frequent breakage of the yarn, and a bad quality of the product. The increased speed of the mule spindle compensates for the time lost while the mule carriage is going in and coming out.

Another disadvantage of the ring frame is the inability to draw the yarn while twisting. Of two threads having the same twist, the better and more regular yarn will be that one in which a small amount of twist was being introduced into the yarn while it was being drafted or drawn. This simultaneous twisting and drafting is what occurs in mule spinning.

It is often claimed that the reason why the ring frame is not adapted for spinning filling is because of the impossibility of making the yarn soft enough. Those who have made careful experiments on this point, however, know very well that on the ring frame the yarn can by the use of light travelers and a moderate speed be made as soft as desired, in fact, softer than is required even for filling.

The inferiority of the ring frame for spinning fine filling on cops is due to the small size of the cop or point of the bobbin as compared with the size of the base of the cone or outside of the yarn on the cop.

As a matter of fact soft fine filling yarn can be spun perfectly on the ring frame, the bobbins having an exterior diameter of ⅞ inch, by using bobbins with a diameter of at least ⅜ inch at the smallest point and of at least ½ inch at the largest point or base where the yarn is first wound. If, however, a small tube like those on the mule (say ¼ inch in diam.), is used on the ring frame, the breakage of the ends will be so frequent as to prevent the operation of the machine, either for filling or even warp. This then is the true reason why the ring frame has not, up to the present time, been generally adopted for spinning fine counts of filling.

Many attempts have been made to overcome this difficulty of spinning on small tubes on the ring frame. One method for producing a compact bobbin that would not separate in weaving consisted in dropping the ring rail rapidly so as to cross the yarn on the bobbin, after which it would rise slowly winding the yarn in regular layers. The objection to this was that a great many threads broke during the descent, as the yarn was at this time subjected to an increased tension. To avoid, this difficulty another mechanism caused the ring rail to rise rapidly, while it moved downward slowly; this prevented the breakage of the yarn. It resulted, however, in the formation of a very soft bobbin, which easily

split in the loom; if the point of the bobbin once became broken it was impossible to straighten it out again, and the whole bobbin had to be thrown into the waste. Another method consisted in applying a differential motion to the driving cylinder of the frame, by which the speed was reduced when the ring rail commenced to descend, consequently, the crossing could be effected without such a rapid movement of the rail; this, however, did not remedy the difficulty.

It is a well known fact that more or less waste is made in weaving mule spun filling on cops, owing to the fact that it is impossible to weave up the last portion of the yarn remaining on the cop, while yarn spun on bobbins on ring frames can be woven up to the last pick. This advantage in favor of the ring frame is estimated at 3 per cent. in the waste made.

A widely spread, but nevertheless erroneous idea has found lodgment in the minds of spinners and manufacturers as to the irregularity of the twist given to the yarn by the ring frame. It is claimed that the ring frame twists the yarn harder at the outside than at the point next to the bobbin. The claim is made that in order to obtain a uniform twist it is necessary that the ring should revolve at a uniform speed; it is the speed of the spindle which remains unchanged, while the ring falls one revolution behind each time that the yarn is wound around the bobbin. Since the time required to wind the yarn once around the bobbin varies with the diameter, being shortest at the point and longest at the base of the cone, it follows that the twist is introduced at a variable rate. Consequently, it is said the twist in the yarn must necessarily vary in like proportion.

This conclusion would be correct if it were not for an additional twist given to the yarn when it is unwound from the end of the bobbin, as is the case of filling coming through the shuttle, and which the line of reasoning that we have cited entirely ignores. Each turn of the yarn around the bobbin contains a latent turn of twist which materializes when the yarn is unwound from the end of the bobbin.

This fact can be readily demonstrated by winding a narrow strip of paper several turns around a bobbin or the finger and then drawing it off lengthwise; the paper will then be

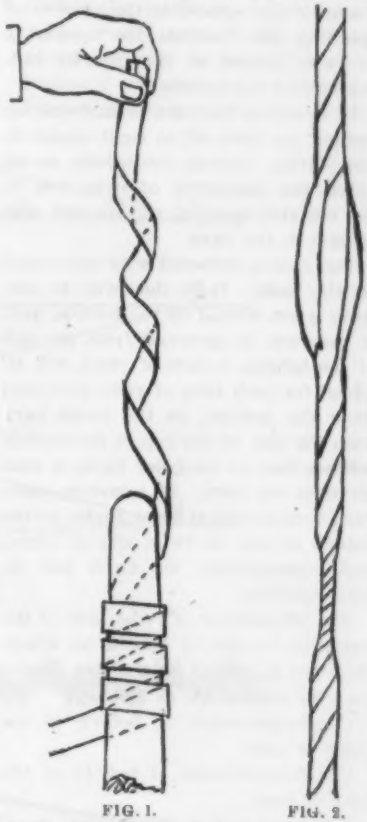


FIG. 1. FIG. 2.

found to contain as many turns of twist as there were turns around the tube, (see Fig. I.) The direction of this twist will be the same as if it had been effected by slanting and revolving the bobbin as is done on the mule. Consequently the unwinding of the thread from the bobbin adds one turn of twist to the yarn for each turn of the yarn unwound from the bobbin.

This is exactly the reverse of the inequality of twist caused by the trav-

eler falling behind the bobbin during the process of spinning on the ring frame and which results in the yarn having one turn less of twist for each turn of the yarn around the bobbin. Thus by unwinding yarn spun on a ring frame from the end of the bobbin, twist is added which makes the total turns of twist in the yarn exactly equal to the number of revolutions made by the spindle in the process of spinning and corrects the inequality of twist caused by the traveler falling behind the spindle.

If, however, the yarn is unwound by pulling the yarn off at right angles to the bobbin, causing the bobbin to revolve, the inequality of twist due to the variable speed of the traveler will remain in the yarn.

The case is different with yarn spun on the mule. Here the twist is uniform when wound on the bobbin, and, if the yarn is unwound from the end of the bobbin, a turn of twist will be added for each turn of yarn unwound from the bobbin; as the turns vary with the size of the cop, it necessarily follows that an irregular twist is thus given to the yarn. If, however, mule yarn is unwound at right angles to the bobbin or cop, no twist will be added and, consequently, the twist will remain uniform.

The irregularity of twist, due to the variation in size of bobbin on which the yarn is wound by the ring frame, may be calculated, as follows:

C=circumference of bobbin at the point of cone.

C_1=circumference of bobbin at the base of cone.

Turns per inch at the point=1 in. ÷ C.

Turns per inch at the base=1 in. ÷ C_1.

Difference in turns per inch between point and base=(—1÷C)—(1÷C).

The bobbin made on the ring frame has about the following dimensions.

C=1¼ inches, circ. at point.

C_1=2¾ inches, circ. at base; hence,

Difference in twist of ring frame yarn between point and base = (1÷1.25)—(1÷2.75)=.436 turns per inch.

The bobbin made on the mule has about the following dimensions:

C=⅝ inch, circ. at point.

C_1=2¾ inches, circ. at base; hence,

Difference in twist of mule yarn between point and base=(1÷.625)—(1÷2.75)=1.24 turns per inch.

This difference of 1¼ turns per inch between the yarn at point and base in mule spun yarn will exist when the yarn is unwound from the end of the bobbin, as in the case when filling passes from a shuttle.

It is frequently asserted that the fine counts spun on the ring frame are inferior to mule spun yarn because of the irregularity in the twist. This we have shown to be erroneous; the twist of ring frame yarn is regular, while that of mule yarn is irregular when unwound from the end of the bobbin.

The real reason why the ring frame is not adapted for fine yarn can be summed up in the following words, "The ring frame does not draw the yarn while twisting it. On the mule the yarn is drawn about 10 per cent. finer when the carriage moves out and while the yarn is being twisted.

It is a curious, not to say remarkable fact that the draft of the yarn on the mule when the carriage is coming out is exerted most upon the coarser parts of the yarn, where it is most needed. The twist passes to the finer places in the yarn leaving the coarser parts soft, (see Fig. 2.) The longitudinal tension on the yarn then draws the coarser and softer places finer and as these thick parts of the thread are reduced in size, the twist enters and arrests the process of drafting, which is then transferred instantaneously to some other and coarser parts of the yarn.

By this process of combined twisting and drafting, during which the draft instantaneously selects the coarser parts of the thread, a very smooth uniform thread is produced, and it is to this that mule spun yarn owes a larger share of its superiority over ring spun yarn.

WOOLEN DEPARTMENT.

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The Warp Shed.

The shed may be defined as the angle formed by the separation of the warp threads to permit the passage of the shuttle.

The mechanical methods of forming the shed may be divided into two classes; single and double. The single shed is formed by raising or lowering a portion of the warp, while the remaining portion is at rest. Fig. 1 represents a single shed formed by raising, and Fig. 2, one formed by lowering the warp. In each case a portion of the warp is held in the line, A C, while the other portion is deflected in the form of a broken line, A B C; the dotted line, h, represents the height of the shed.

The single shed is but little employed, chiefly in certain kinds of jacquard weaving, where the shed is formed from 2 to 2½ inches high.

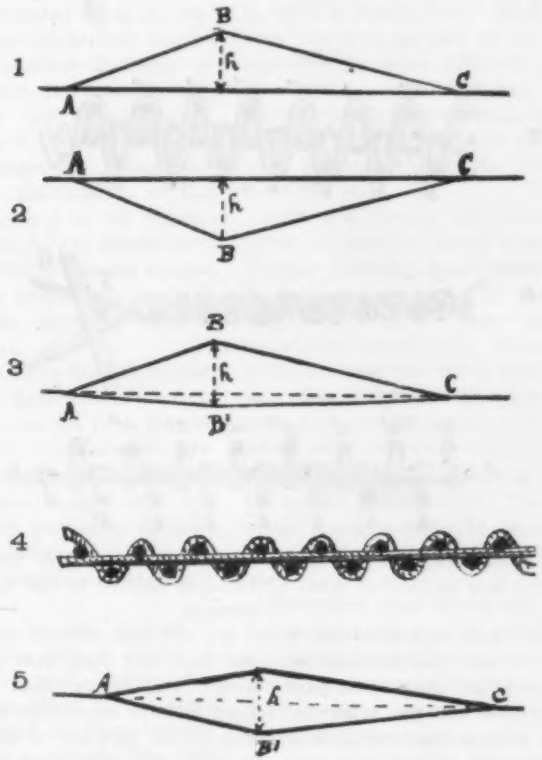


Fig. 3 represents the shed produced. The less the warp is raised above the level, A C, the less will be the tension on the yarn.

The primitive method of weaving consisted in the use of a single harness or shaft carrying each alternate thread or one-half of the warp. This

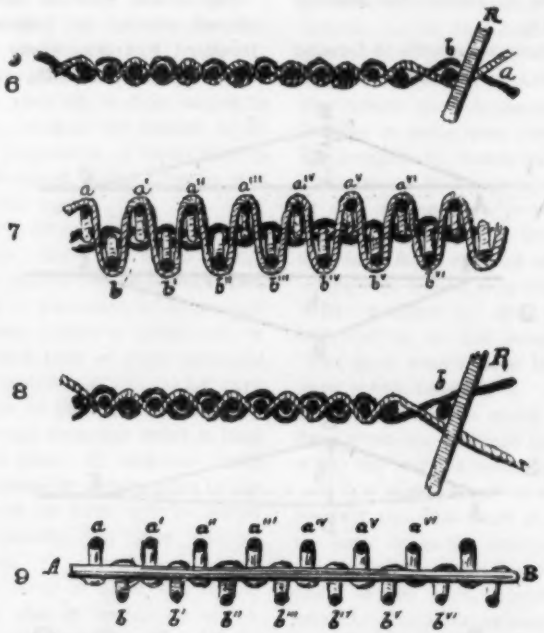
shaft formed the shed by alternately rising above or dropping below the level of the other threads, which remained at rest.

Fig. 4 represents a longitudinal section of a cloth woven with one harness; the lines represent the warp, and the points, the filling. This illustration shows the irregularity of the fabric caused by operating but one-half of the warp threads. Owing to the unequal tension two warp beams are needed for this method of weaving.

The double shed is formed by a combination of the two methods of producing the single shed. One part of the warp rises and the other descends; it is evident that for a shed of the same height it will be necessary to deflect the warp threads but one-half as much as with the single shed. Fig. 5 shows the position of the warp yarn in a double shed.

In the operation of weaving there are three different kinds of sheds: 1. Closed Shed; 2. Mixed Shed; 3. Open Shed.

These expressions, in common with many others, are used in a double sense. This is due to the fact that in the transformation of the weaving industry from hand to machine work, many expressions which originated in the hand industry were retained in machine work. The original terms, open shed and closed shed, related originally to the shed when the reed pressed the filling in position; this meaning has not only been retained, but also applied to the action of the harness.



We will first consider the action of the reed and then that of the harness. The terms open and closed shed used in connection with the action of the reed are of general signification, that is, they are used in both hand and power weaving, while the same terms applied to the action of the harness are employed only in power weaving.

1. Closed Shed: Cloth is made with a closed shed when the following shed has already been formed when the reed is driving the filling

thread into position. Fig. 6 shows the action of the reed, R, and filling pick B; the shed A for the succeeding pick is already formed. The filling pick, having reached its proper position, is pressed both by the warp thread and the reed at the same time; it is thus subjected to a torsion, which contributes much to the solidity of the fabric.

Fig. 7 is a transversal section along the line of the last pick in a fabric woven with the closed shed at the moment when the reed is pressing this pick into position. The warp threads are represented by a, a^1, etc. and b, b^1, etc. As the harness has already changed position in order to form the next shed, the filling thread will be deflected both up and down, as shown at Fig. 7. The closed shed thus has a tendency to stretch the filling thread in the interior of the fabric. This tendency is not regular and, consequently, at the intersection of the warp and filling threads minute irregularities are formed which gives the fabric a dull, irregular appearance when woven.

2. Mixed Shed: The shed is termed mixed when the harnesses are all on the same level when the reed presses the filling thread into position. In this shed the filling thread assumes a straighter position than with the closed shed. This method is suitable for most fabrics, although it does not form as firm a texture as the closed shed.

3. Open Shed: In this method of weaving the filling pick is placed in position by the reed before any change has taken place in the shed, see Fig. 8. The various filling threads are thus kept in a straight line and, consequently, are nearer parallel than is the case with the other sheds.

Fig. 9 is a section of the fabric woven with an open shed showing the position of the warp threads and filling pick, as the latter is brought into position by the reed. A B is the filling pick a, a^1, etc. and b, b^1, represents the warp threads. Practically the same results are arrived at by both the open and mixed sheds. In the open shed the filling thread is not subjected to that torsion which it undergoes in the other sheds; consequently the filling pick occupies a straighter position, the intersections are less rounded.

From what has already been said, it will be readily understood that each form of shed has its advantages for particular fabrics. Fig. 14 represents a fabric in which the portion, A, has been woven with either an open or mixed shed and the portion, B, with a closed shed. These drawings will give an idea of the effects produced by these different methods of weaving. We may sum up the matter by saying that with the open shed the warp deflects the filling and with the closed shed the filling deflects the warp.

Most silk fabrics are woven with either an open or mixed shed, while in other fabrics a closed shed is used to a greater extent. The open shed has a tendency to make the warp prominent, while the closed shed tends to make the filling more apparent. The closed shed has also a tendency to cause the goods to shrink in width after weaving, while the fabric woven with the open shed retains the woven width better. The takeup of the filling is naturally greater with the closed shed than with the open shed.

The closed shed should not be used indiscriminately for all fabrics; it is necessary to modify the shed according to the nature of the fabric; thus a fabric with a cotton weave and wool filling should be woven with a closed shed in order to give the cloth more the appearance of all wool. Fabrics made with silk organzine warp and wool filling should be woven with an open shed in order to make them resemble pure silk goods.

A partially closed shed is still used for manufactured goods where it is desired to have the filling and warp

show alike, and as in pure linen goods.

SHEDS IN RELATION TO HARNESSES.

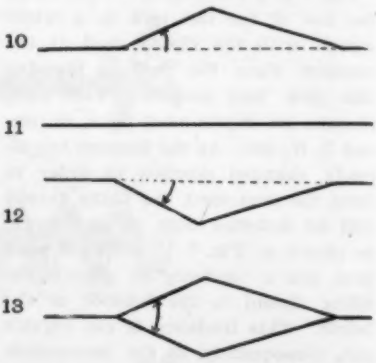
From the point of view of the action of the harness, looms are called either open or closed shed. Fast running looms are operated with an open shed, while slow running looms generally have closed sheds.

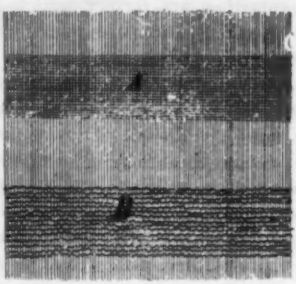
For a closed shed all of the harnesses are brought to the same level after each insertion of the filling. The succeeding shed thus begins to form at the level of a line drawn from the whiproll to the breast beam; that is to say, if a harness lowered at one pick is to be raised at the next one, it is first brought to the centre level and then elevated, the movement being in reality a double one. In other words the action of the harnesses in power looms with a closed shed is similar to that in hand looms; the harnesses are brought to a common level after the passage of the shuttle. This action takes place whether the succeeding shed is the same or not; thus, if one harness is raised for several consecutive picks, it is nevertheless thrown to the centre level at each pick. The warp threads thus assume the three different positions shown at Figs. 10, 11, 12; the complete shed is shown at Fig. 13.

At the moment the reed drives the filling into the fabric, they occupy a position shown at Fig. 11 and, consequently, to lower or raise a harness it is only necessary to move it a distance equal to one-half of the height of the shed.

In weaving with an open shed the action of the harness is entirely different. Any harness that may have been raised can be lowered with one movement, while a harness that has been lowered also requires but one movement in rising. This method saves time in the formation of the shed, as the harnesses remain stationary when they are up or down during several consecutive picks. Weaving with an open shed thus has the advantage of lessening the friction of the warp threads on each other; consequently it is well suited for weaving tender yarn.

Paradoxical as this may appear, it is nevertheless possible, first to weave with a closed shed on looms operated with a closed shed, second to weave with an open shed on looms





operated with a closed shed, third to weave with a closed shed on looms operated with an open shed, fourth to weave with an open shed on looms operated with an open shed.

These apparently contradictory statements can be reconciled by the double meaning of the word closed and open, as applied to the shed of the warp.—L'Industrie Textile

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—It often happens that ignorance inspires boldness and that knowledge is the cause of timidity.—De la Houssaye.

The Matching of Colors on Raw Stock.

The close matching of colors to a sample is of the greatest importance in textile manufacturing. Variations in shade often result in large quantities of goods being returned. In order to match colors closely, it is not only necessary for a dyer to possess the required skill, but he must have means of finding out quickly what the shade of the material is during the processes of dyeing. The color of cloth or yarn under treatment is easily determined by removing a small sample of the yarn and cloth from the tub and drying it.

This, however, does not answer in the case of raw stock. There are in most cases variations in the color of raw material. These variations with which every dyer is familiar are equalized in the subsequent processes of picking and carding. It is not too much to say that one-half of the variations in the shade of the raw material from the sample by which the goods were sold, is due to the dyer being misled by the swatches, which he takes from the material in the raw state.

For this reason a convenient means of obtaining samples showing the real shade of raw stock will prove of great benefit to manufacturers. The only means of doing this is to run a small portion of the stock through a card to equalize the imperfections and variations in the shade. Unless a card is always ready for this work, the dyer is misled and variations are discovered when the material has advanced too far to apply a remedy.

A few mills have a regular sized breaker card for this work of sampling, but the use of a large card involves the making of considerable waste.

A COLOR SAMPLING CARD FOR RAW STOCK.

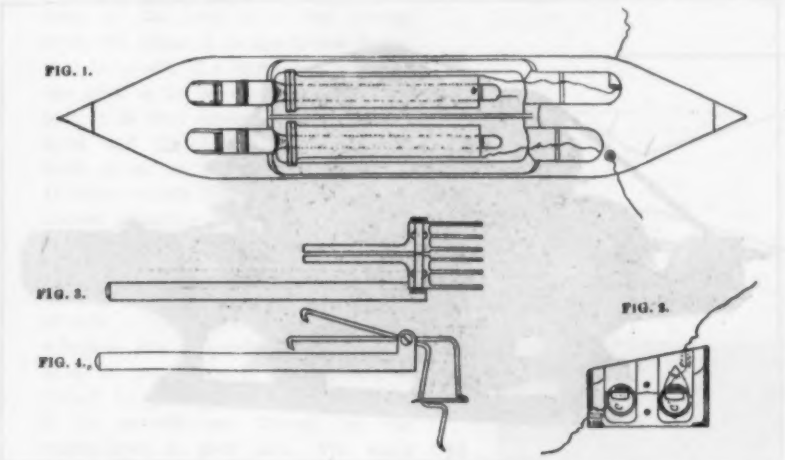
The Torrance Mfg. Co., Harrison, N. J., are putting upon the market a small breaker card, shown in the accompanying illustration, for carding samples of colors on raw stock. The cylinder is 15½ inches in diameter and the other parts are of proportionate size. It occupies a space of 4 feet in length by 2½ feet in width, and is a complete card in every way, all the bearings being adjustable. We believe it will prove very popular with manufacturers and dyers for matching colors in raw stuffs, and result in the prevention of many claims for "off shades."

Further information in regard to this card can be obtained from the builders, the Torrance Mfg. Co., Harrison, N. J.

—Our troubles arise from our selfishness.—Edmond Thiandiere.

A Shuttle Carrying Two Threads.

This shuttle has been invented in France for weaving two picks at one time. Certain goods require two threads in a shade, and shuttles carrying two bobbins have been used for a long time in hand weaving, but numerous difficulties prevented their being utilized for power looms. Shuttles were made with two bobbins in tandem, but this made the shuttle too long; the shuttle box of the loom had to be changed, and besides this, the two threads did not lie parallel, nor have the same tension. They became twisted, giving the cloth a very undesirable appearance; when one thread broke, the stop motion did not stop the loom.



The following are the principal features of the new shuttle: It is made in the form of a trapezoid, in order to utilize fully the space in the shed. The two bobbins are side by side so that the shuttle is no longer than the ordinary one. One thread comes out at the corner of the shuttle, and the other at the diagonally opposite corner. This prevents them from becoming twisted. The stop motion consists of two forks of unequal lengths, so that each fork rests on but one of the threads. The speed of the loom is not reduced, while the production is increased from 80 to 100 per cent. Various effects can be produced without difficulty, such even as pick and pick.

The expense of changing the old style looms to adapt them for this new shuttle is said to be not over ten dollars. The device however, is not adapted for all fabrics and the advantage of this shuttle is greatest when making fulled goods. The waste is somewhat larger, as the two bobbins do not run out at the same time, but with skilful handling, great advantages may result from its use.

Fig. 1 is a view looking down on the shuttle. Fig. 2 is a cross section, C and C′ representing the two bobbins. Figs. 3 and 4 are different views of the stop motion forks, which do not differ from the ordinary device, except in the width of the hinge, which is made wider to receive two forks instead of one.

—According to the annual statements of twenty-one incorporated worsted and woolen mills in Austria and Germany, their business operations in 1900 resulted in losses, aggregating $12,000,000, due principally to the decline in the value of wool. The stockholders are wondering who it was that gained this amount, which they lost.

Finishing Wool and Mixed Fabrics.

VII.

BY N. REISER.

Translated from the German for the Textile World.

Continued from October.

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After burling and sewing, the goods are examined by the overseer to make sure that the work has been properly done. The further manipulation of the goods depends upon the particular fabric to be finished. Zanellas and similar light worsted goods, for example, go direct to the crabbing machine, while other fabrics may need to be scoured, others fulled, etc.

If the goods are to be scoured, they should be weighed in order to determine the necessary quantity of soap and scouring material to be used. In this connection the kind of oil used on the stock is an important factor in the problem. The operative who weighs the goods should see that the pieces are dry, and further, what kind of goods he has to do with. Do they contain a small or a large percentage of dirt? Was new or old yarn used in their manufacture? Was the wool oiled with a good quality of oil that is easily saponified? Is it a worsted or carded wool fabric? Does it contain shoddy, or has it an all wool face to which has been added a cheap backing?

The action of the scouring materials is influenced by so many different factors that each kind of goods will occasionally make the most varied demands upon such materials. It often happens that the wool has been scoured better in one case than in another. The oil used on the stock may have varied. The temperature of the water or of the scouring room may vary. It frequently happens that one fabric is thicker than the other. In such a case more material must be used, because the scouring liquor does not penetrate the thicker fabric so easily. Less scouring material is needed in a warm room or where tepid water is used than in a colder room or with colder water.

The particulars regarding each piece should be carefully entered in a book by the scourer. This book should give the date when the piece was received, the piece number, style, weight, length and width before scouring, the kind and quantity of soap, soda and fuller's earth used, the length and width after scouring and any defects which may have been observed.

SCOURING MATERIALS.

Scouring materials are those substances which combine with water and are used to remove oil, grease, size, dirt and surplus dye from the woven goods. The most common materials are soap, soda, ammonia, potash and fuller's earth.

This is not the place to enter into a discussion of the chemical constitution of scouring materials. It is our place rather to treat of their use. The principal scouring materials are soap and soda. Seldom, if ever, can the fuller answer the question as to which soap is the best for scouring the goods. It often happens that with the same soap entirely different results are obtained. It is very important that the wool used in the manufacture of the goods should be well scoured. This, however, is far more important with wool dyed goods, as colors applied to imperfectly scoured goods will not be fast. With piece dyed goods the condition of the raw material is not so important.

It is, however, very important that a good quality of oil should be used on the stock. The best material for oiling wool is red oil, and we will here consider the question as to how red oil should be manufactured to make it suitable for the oiling of wool. It should be as free as possible

from mineral oil and consequently quite thin. Such an oil is furnished by many manufacturers today under a guarantee of 97 to 98 per cent. of saponifiable material. Such an oil is excellent for oiling wool, and can be scoured from the goods without difficulty and with the use of very little soap.

There are brands of red oil on the market which contain as much as 10 per cent., or even more, of mineral ingredients. This is not the result of adulteration, but is caused by a careless method of manufacture. It is difficult to discover the presence of this mineral oil by a mere inspection or smelling of the red oil. It works fully as well in the spinning process as the pure oil does. The difficulty arises when an attempt is made to scour the goods.

Red oil is sometimes adulterated with rosin by unscrupulous dealers. This substance costs only about one-fifth as much as red oil, and can be sold at least ½ cent per pound less than the pure oil. Many spinners buy this mixture because it is cheaper and works as well in the process of spinning. If a dealer in this adulterated oil is asked the question, "How is it possible for you to sell an oil for less than the manufacturer himself?" the answer will be, "It is because I handle such large quantities." It is well known that such goods can be bought at lower prices when large quantities are purchased, but it is also a well-established fact that such advantage does not amount to more than ⅛ of a cent per lb. There is also a slight difference in the freight rates in favor of large shipments. All of this, however, does not amount to enough to enable the dealer to sell red oil for from ⅜ to ½ cent per pound less than the price quoted by the manufacturer.

Red oil dissolved at a gentle heat in 90 to 91 per cent. of alcohol should form a clear liquor, and, if a warm alkali solution consisting of one part of soda and 10 parts of water to each two parts of red oil is added, a clear soap should form, otherwise there is rosin, mineral oil or other adulterants present.

Another test which has been used for a long time by the writer is as follows: The red oil is mixed with an equal quantity of spirits and then shaken. This mixture should form into clear drops, and there should be no sediment at the bottom or scum at the top. Then a light quantity of ammonia is added, and the mixture shaken. If the oil is pure, a clear soap is formed.

Woe to the fuller who has to handle goods made from raw material oiled with inferior material. In most such cases it is impossible to thoroughly clean the goods. Frequently the cause of the trouble is sought for in the quality of the soap. If the soap has a disagreeable odor, it is sometimes assumed that the cause of the trouble has been found, and the soap is immediately returned to the manufacturer.

It often happens when the goods are made from the same lot of yarn that some of the pieces will be clean and others come out dirty. This is frequently due to the fact that the clean pieces were lighter or more loosely woven than the others, consequently the scouring liquor penetrated the loose fabrics better, and the unsaponifiable material in the goods was removed. When such difficulties arise, means and methods must at once be found to bring the goods out uniform. The simplest means consists in running the goods longer in a strong solution of fuller's earth, and afterwards rinsing well. Imperfectly scoured goods cannot be well colored. The finisher is held responsible for the goods being unclean, while the dyer is held responsible for the poor color, whereas, if the spinner should always use the best quality of red oil, dirty and shady goods would be seldom found.

(To be continued.)

KNITTING DEPARTMENT

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Knit Goods Situation.

Not much life has been in evidence in the knit goods market until the last few days, when weather conditions became more favorable and considerable activity was manifested in popular priced heavy weight garments for immediate delivery. The market is in an excellent condition generally and the prospects are bright for a good season's business.

Original order on heavy weight goods were more than usually light, as a result of which many manufacturers curtailed their production with the result that there is no indication whatever of an overloaded market, and better prices will be realized all around.

In fact, there is a strong possibility that with the advent of cold weather there will be a shortage of heavy weight goods. Agents have expressed themselves as being in a position to sell more heavy weight wool goods at about $6.00 to $7.50 per dozen, if they could get them for quick delivery, but on account of the curtailment referred to above, prompt delivery was not to be had.

On spring lines of men's underwear the largest business of course has been done on balbriggans, the prices in many cases not being entirely satisfactory to the manufacturer. A decided tendency toward the purchasing of higher grade goods was a very pleasing feature of the season's business and many lines of mercerized underwear were sold up to good advantage.

A large business has also been done on ladies' summer weight ribbed garments, and in some cases competition was noticeably keen. Ladies' 8-lb. ribbed vests, which sold at the opening at $2.00, were gradually worked down to $1.85, and in a few instances orders were booked at $1.80, but it is hard to see how a manufacturer can turn out an honest 8-lb. garment at this price.

An instance was brought to the attention of the writer a few days ago where a Southern manufacturer took orders on a sample which weighed full eight pounds, but upon examination of a case of the goods some dozens were found to run even as low as seven pounds to the dozen; in fact, the entire case was irregular throughout.

In the finer grades of ladies' vests there is a noticeable tendency in the direction of elaborate lace trimming, and these higher grade goods are being bought much more freely than in former seasons. This is largely due to the prevailing popularity of the thin, gauzy and open-work shirt waist materials of the past season, the continued popularity of which is undoubtedly assured for the season of 1902.

The writer was recently accorded the privilege of looking through the import line of fine Swiss, cotton and lisle vests of a leading importer, through whose courtesy we are permitted to illustrate some of the best styles in Figs. 1, 2, 3 and 4.

It will be noted that some of these styles are not only lace trimmed, but have also a dainty lace yoke of the finest material and workmanship. This class of goods has been copied to a certain extent by domestic manufacturers, but in no case have such elaborate trimmings been attempted, although it will not be long before domestic manufacturers will produce

styles which will compare with any of the goods that are being imported today.

Manufacturers of heavy weight goods are already looking forward to the fall season of 1902, and fleeced underwear sample lines are in course of preparation, although it is not anticipated that any lines will be placed on sale before the second or third week in November at the earliest; the later the better for all concerned, both manufacturers and buyers.

According to information which has come to our attention, it is probable that the opening prices of fleeces will be slightly lower than opening prices of the season of 1901, but what the outcome will be no one can safely predict. It is more than likely that it will be another case of cutting and slashing, for, as far as we can learn, no definite schedule of prices has been agreed upon as yet by manufacturers.

The domestic hosiery market still remains unchanged. No activity has been noticed with reference to staple lines, although a fairly healthy tone prevails and the demand still continues strong for ladies' lace effects in hosiery, both seamless and fashioned goods. The manufacturers of ladies' fashioned lace hosiery, of whom there are only a few in this country, have practically their entire production already placed and are now figuring on new styles for season of 1903.

Prices on the Chemnitz hosiery market rule strong and no reductions are looked for. Notwithstanding the fact that many new lace machines have been set up to meet the demand, manufacturers of lace hosiery are sold up from four to six months in advance. Lace embroidered goods, particularly the vertical stripe lace effects with alternating embroidered patterns, will also be good and solid colored plain embroidered goods will be in strong demand. Orders for staple goods are not quite up to the average, but the majority of manufacturers have sufficient orders booked to keep their plants running and no price reductions are looked for.

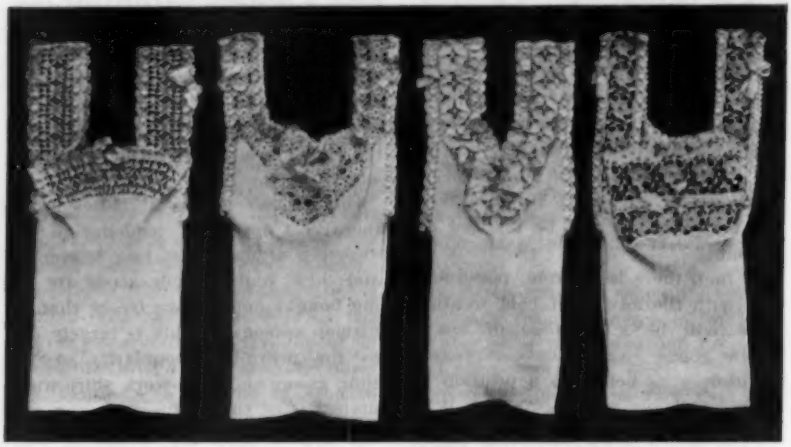


FIG. 1. FIG. 2. FIG. 3. FIG. 4.

—The high valuation of flax in European markets has called the attention of agriculturists in the Argentine Republic to this product, and preparations are being made to sow a much larger area than was cultivated in 1900. The Argentine flax production of last year was double that of 1899, the exports during the present year having been 350,000 tons as compared with 175,000 tons shipped abroad during the same period in 1900. The exports for 1902 are estimated at not less than 500,000 tons.

Oil Spots: How Caused and How Removed.

This is a question asked some time ago in the Textile World. The question should be first asked: How do they get there? This is of the most importance. Some manufacturers use very low grades of lubricating oils on their frames; this should never be used, unless it is known for a certainty that they are stainless; there are many inferior lubricants on the market, and many people can be coaxed to purchase them from some oily-tongued lad; it is not long, however, before they discover that a great mistake has been made; unless the cutter is very careful to keep the spotted goods separate so that after being seamed they can be cared for and the spots removed before they are put in the regular work, the whole lot, if mixed, may have to go for seconds.

One may ask how oil spots get on the cloth from the frames. Listen, some knitters are careless, and where a couple of drops of oil would do, they'll put on triple the quantity required; for some time after the frame is started the oil will sprinkle, leaving spots here and there; oil dropping from the centre of the frame, from the working of the takeups, will cause trouble; for, where one of these drops falls, it will penetrate from two to six or more thicknesses of cloth on the roll.

The overseer should see to it that the drip pans on the frames are kept clean, and the takeup shaft wiped daily, instead of once a week. I have known many knitters who did not look at the drip pans until they were full and running over. A short time ago I was called to a five set mill, where they were making 24-gauge ladies' and gent's summer wear; they were puzzled to find out where large oil spots were coming from, although they had made a diligent search. When I called I discovered very readily where the trouble was; the frames had no takeup oil drips on them. They had recently changed the product from cheap, coarse, colored goods to 24 gauge white. The knitter who had been there for four years previous could not account for the spots until I showed him the cause. I had small, tin drip pans made and attached to the frames which prevented the large spots. Let me say they were not our American frames.

There are other departments beside the knitting room where dirty, greasy oil spots are caused. The sewing machines with no shields or guards over the driving belt are apt to make oil spots. The best of stainless oil should be used; and when the machine has been newly oiled, it should be run over a piece of waste cloth for a few seconds, before running on the regular work. This rule should be in force in all mills. Great care should be taken in the selection of oil, and the purchase should not be left to every Tom, Dick and Harry. From the many oil manufacturers, select one whom you can trust, and have him understand clearly what you want the oil for; trust him to furnish you with what has proved to be the best for the purpose.

There is a wide difference in oils. Oils may be divided into three classes: lard, olive and mixed oils. The lard oil, as it is called, consists of five or six different qualities, and some manufacturers find it more economical to use olive oil, and are convinced that the advantages easily offset any increase in the initial cost. The ordinary lard oil is usually made from the refuse of animals, and in the process of manufacture, requires an excessve amount of acid for clarifying purposes. The consequence is that the average lard oil is almost as difficult to get out of the goods, as the mineral oils, and there is nearly always more or less grease left in the fabric. This may not be observed to a great extent until the material comes to the dyer, if the goods are to be colored.

When they reach the dyer, he is apt to find something which acts as a re-

sist to the color, and in his best efforts he will be face to face with conditions which defy his getting even colors; in many cases the manufacturer, or superintendent, is at a loss to know the cause. This is a trouble which is met with very often. A precipitate of grease is in the goods, which makes perfect dyeing impossible.

Mineral oil is often adulterated with degras. Both of these ingredients are exceedingly difficult to get out of the goods, except by an excessive amount of working. For the degras is difficult to expel and the mineral oil may be regarded as a fixture. If the manufacturers would use a good grade of olive oil, they would find ere long they were employing the cheapest and most economical material, and many of the numerous oil and grease stains would disappear.

There are various kinds of grease stains; some are removable by the use of soap; others resist this agent; the latter are generally the mineral oil stains. Two or more methods may be applied for their removal. One method is to rub the grease spot well with olive oil or preferably oleic acid of a good quality; allow this to soak well into the stain, then remove by a treatment with the best soap. Another plan is to place a cloth under the stain, damp this well with a sponge dipped in benzine until the grease stain is well soaked, then absorb with a clean piece of white blotting paper by passing a hot smoothing iron over the paper. If not successful at first try again. This process will remove any fresh oil stain or leave it in such a condition as to admit of easy removal with soap.

Old stains are more difficult to remove than fresh ones, but a few applications will generally remove them also; some use a soda lye, but this is rather risky, and might lead to injury of the goods. If dealing with iron stains, treat the spot with acetic acid or lemon juice and salt, then wash well with hot soap.

The washerman should have on hand at all times for grease spots a bottle with alcohol and salt, also a sponge, and should rub the spots well before entering them into the washer. This is something I used of late, and it works like magic. Nothing better that I ever tried. Borax dissolved in soft water and applied with a sponge, or woolen cloth, will remove fresh grease spots on woolen goods; some use turpentine to remove paint spots; both benzine and chloroform are excellent, and will not injure the goods.

OLD SUPERINTENDENT.

White Hosiery.

The fad for white hosiery has been one of the most notable features of the fashion of the summer. From very small beginnings, in fact from what was at first only a vague suggestion, the white-stocking fad has assumed a most important proportion.

It is remarkable with what celerity white hosiery has become ingratiated with the public. At first only a whispered fancy, it has in the past few weeks gained such a hold on popular fancy that in order to be strictly in accordance with the latest mode, even women and children are wearing white hosiery.

This fad for white stockings caught most of the dealers unawares, and there has been a great scarcity throughout the market. The large city retail houses, as well as the small specialty shops, particularly the haberdashers, have been clamoring for white hosiery and jobbers and manufacturers have been unable to keep up with the demand.

In view of the present craze, the question arises, are we in the first stages of a genuine revival of white hosiery, or is it a short-lived fad, a passing fancy. There are, however, certain indications which lead one to believe that the idea will be a good one for next summer. The very fact of the scarcity in all lines has whetted the appetite for the novelty. More than this, it is a pretty fancy as well

as a decided departure from the black and colored effects in hosiery that have so long exclusively prevailed.

Ideas for producing novelty effects in hosiery have been so sadly overworked in seeking for something really new the white stocking was a happy thought. It is extreme without being bizarre, clean looking and gives to the wearer a look of elegance in dress not to be obtained by any colored novelty. It is directly in line with the revival of many other quaint old fashions. It is not so many years ago that white and unbleached stockings were exclusively worn. Until the secrets of the dye pot were perfectly mastered, colored hosiery was a failure. But of recent years the art in stainless dye has attained perfection.

However much claim to preferment solid color and novelty-dyed hosiery may have, it is safe to book white hosiery for another summer, and particularly so in the lace weaves. It is of course to be classed among novelties entirely, but as such it will undoubtedly have a good share of favor. —Chicago Dry Goods Reporter.

—The metric system is today compulsory in twenty countries, representing more than 300,000,000 inhabitants. Germany, Austria-Hungary, Belgium, Spain, France, Greece, Italy, Netherlands, Portugal, Roumania, Servia, Norway, Sweden, Switzerland, Argentine Republic, Brazil, Chile, Mexico, Peru, and Venezuela.

—Fame is a house in which the kitchen is invisible.—Balzac.

Bur for Knitting Machines.

An improved knitting machine bur has recently been patented in this country and is described as follows:

This invention is an improvement in knitting machine burs, particularly such as are employed on machines for knitting "pattern fabrics" and "backing fabrics," which burs have blocks adapted in "pattern-work" to press in the barbs of such needles as engage therewith, so that the stitches will be cast from the engaging needles, or in "backing-work" the blocks are adapted to spring back out of the line such of the needles as they are arranged to engage with in order to allow the backing-yarn to be laced between the needles.

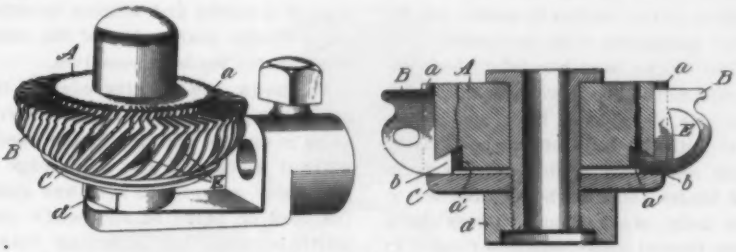


FIG. 6.

The invention is applicable to various known constructions of burs; and it consists in the improved construction of the blocks and blades: the accompanying drawings illustrate a bur and blades and blocks constructed in accordance with this invention. Fig. 1 is a view of the bur. Fig. 2 is a transverse vertical central section through the bur on an enlarged scale, with all but two of the blades and attached blocks removed.

The bur illustrated in Figs. 1 and 2 is in general construction similar to what is known as the "Kavanaugh" type of bur, having circular body A, provided with inclined slots a in its periphery, which are adapted to receive and retain blades B, which, as shown, have hooks b on one end that project over one end of the body and engage an annular recess a' in such end of the body and are confined there-

to by a cap-plate C, which is secured by the nut d, screwed onto the threaded end of the bushing or hub D of the bur, said hub passing axially through the body as shown in Fig. 2. As thus far described the parts are all old and well known.

Heretofore the burs have been provided with blocks arranged between the blades at desired intervals, according to the character of work to be performed, said blocks being adapted to press in the barbs of certain of the needles or to spring back out of line certain of the needles to enable the desired operations to be performed.

The blocks have heretofore been attached to the bur in various ways—for example, they have been made integral with the body of the bur. They have also been made separate from the blades and detachably fastened to the body of the bur. Others have been formed separately and riveted to the blades.

Again, the blades have been formed with abutments or projections to take the place of the blocks, and in one instance, the blocks have been detachably connected to the blades. These different constructions have all had various advantages and disadvantages, and all of them in which the blocks have been formed separately from the blades, but connected thereto, have been expensive to manufacture and more or less unsatisfactory in operation.

This invention relates particularly to the construction of the blocks and attachment thereof to the blades in a very simple, economical and efficient manner, and is applicable to almost any bur having peripheral blades used in manufacturing pattern or backing fabrics, the invention not being limited to any particular contour of the blades nor to any particular arrangement or mode of attachment of the blades to the body of the bur.

Each blade B to which a block is to be attached is formed with an opening which may be of any desired contour, and is preferably located at about the centre of the exposed portion of the blade, and also preferably of large diameter, approximately that of the block at its widest point, so that the openings may be readily punched in the blades, thereby avoiding the expense of drilling.

The blocks E are preferably of a size and form to fit closely against the periphery of the body (when the opening is circular), fill the space between any two adjoining blades, and project sufficiently outward between the blades to effectually block the passage of a needle and without interfering with the gear action of the outer edges of the blades themselves.

As shown, the working edge of the blade has a smooth or gradual curve, so as to engage and deflect the needle without shock and jar. This edge is preferably grooved, to keep and guide the head or beard of the needle centrally between the adjoining blades and prevent wabbling of the needle therebetween.

On that face of the block which is intended to fit against the retaining blade, B, is a projection, E, which conforms in contour to the opening, b, in the blade and projects from the block a distance preferably equal to the thickness of the blade to which the block is to be connected, so that when the block is attached to such blade the projection, E, of the block exactly fills the opening, b, in the blade, so that the latter on the side opposite the block presents a practically unbroken surface which will not interfere with the needles nor hold waste flyings.

This projection, E, is an integral part of the block, E, and as they are made in one piece the projection may be formed either by cutting away adjacent portions of the surface of the block or by stamping the block and projection from a suitable blank.

As shown, the projection is formed at about the centre and widest portion of the block and preferably of large diameter, so as to enable the opening in the blade to be punched and so as to give greater bearing sur-

face to the opening. The projection is substantial and unbreakable and being integral with the block can be hardened therewith.

Oxidizing Machine for Hosiery.

The accompanying illustrations show the new hosiery oxidizing machine, patented and sold by Alexander N. Dubois, 2170 Sedgeley Avenue, Philadelphia, Pa., who is well known to the trade on account of his numerous patented processes and machines for the improvement of fast black dyeing of cotton, hosiery yarn and horse hair.

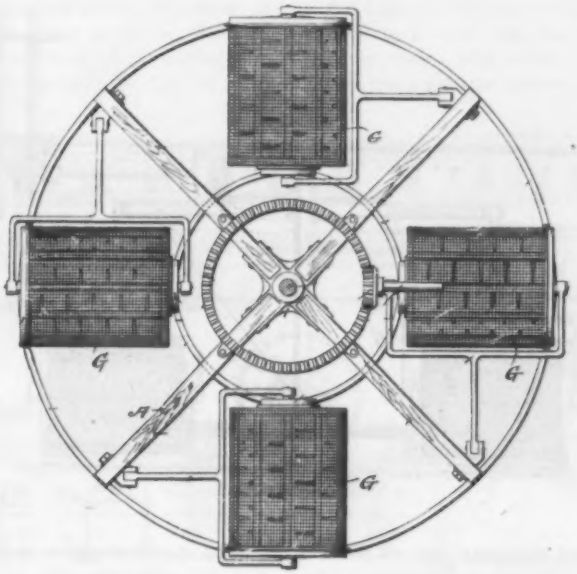


FIG. 1.

It will be seen that when rotary motion is imparted to the frame, A, the cylinders, G, will be moved around the annular trackway and in thus moving will also rotate on their axis so as to expose all surfaces of the goods to the action of the atmosphere.

By this means a large amount of goods may be handled quickly and in a very small space.

The most important advantage secured, however, is that of exposing the goods to the atmosphere at all points, north, south, east and west, in the oxidizing room or inclosing structure in which the apparatus is arranged. The inventor, who is an experienced dyer, states that he has observed it to be an invariable fact that the atmospheric conditions of the oxidizing rooms of dyehouses vary according to the direction of pressure of the outer atmosphere, the atmosphere at the side of the room facing in the direction from which the wind is blowing being in every case in which he has made observation much more moist than at any other part, and dryest at the opposite side.

He adds that where the goods are placed within cylinders rotating in fixed bearings those placed within the cylinder at the moist side oxidize very slowly, while those at the opposite side dry too quickly and become tender and frequently have to be sold as second-grade goods; this results in loss of time in the one case and damage to the goods in the other.

This new machine, as can be seen

by Figs. 1 and 2, is different in its motion, as it has a combination of two movements at the same time, one vertical and the other horizontal, while moving upon a double trackway at all the points of the compass.

In the ordinary stationary oxidizing drum the goods revolve always in the same way at two points of the compass, and in a very narrow space limited to the diameter of the drum, whereas this new machine carries the goods around and exposes them to all the points of the compass.

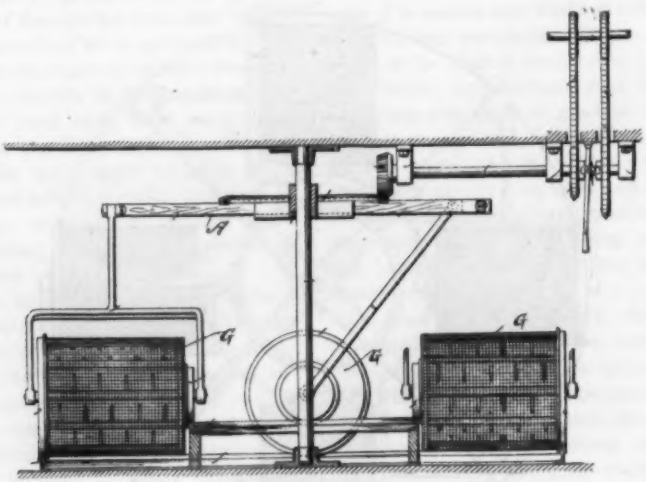


FIG. 2.

It follows naturally that all parts of the goods are exposed equally to dry and damp atmosphere. The hot air is mixed uniformly, causing the goods to dry evenly and all at the same time, and oxidize fully one-fourth to one-third quicker than with the stationary drum. This means a saving in time, steam, and wear and tear of at least 25 to 33 per cent. The most important claim for this machine is the doing away with the chance of tendering the goods by the production of nascent-hydrochloric acid, a difficulty so common with the methods usually employed.

Nearly every dyer has had experience with tender goods caused by conditions which he was powerless to remedy, owing to the imperfect apparatus for handling the goods during oxidizing. It is claimed that with this machine the formation of nascent hydrochloric acid is reduced to a minimum even when inferior dyes are used.

It is of frequent occurrence that the goods on one side of the stationary drum will be green while on the other side they are white or a very light green. After long observation and experience, Mr. Dubois reached the conclusion that the only way of overcoming this difficulty was to rotate the machine in the way already described. The new machine can be built in any size desired. A simple device, shown in Fig. 2, is provided for altering the speed to suit different conditions. Old stationary drums can be equipped with this new rotary device. Further particulars may be obtained from A. N. Dubois, 2170 Sedgeley Avenue, Philadelphia, Pa.

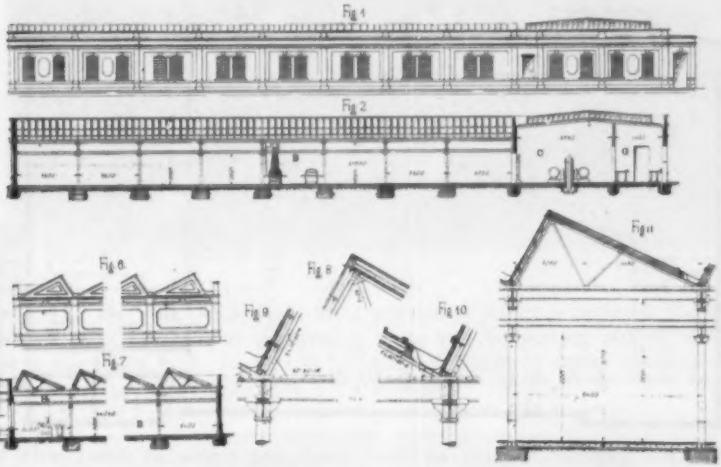
—Misanthropy is a callus that forms around the mind of man after a more or less prolonged contact with society.—Anon.

SILK DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

A Silk Weaving Mill.

The accompanying plans and illustrations are those of a silk weaving plant recently erected in Germany, and contain many points of interest to our readers. The plant is designed for 154 looms and 14 preparing machines. The interior is lighted with



360 incandescent lamps and three arc lights are used for exterior illumination.

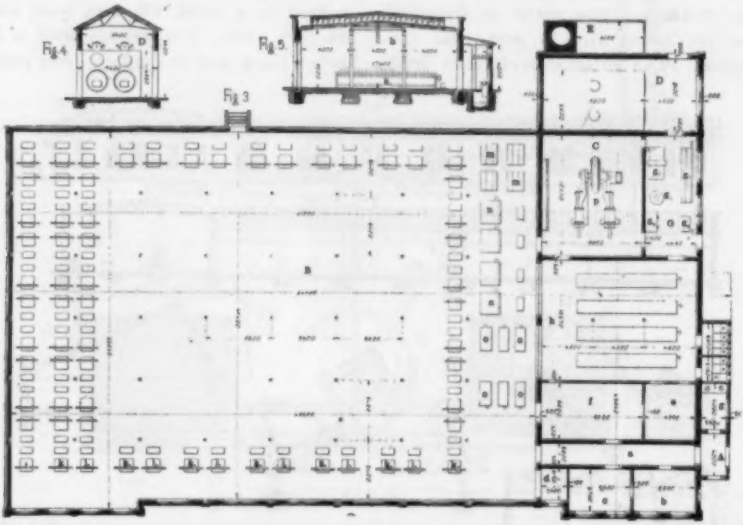
As the plan, Fig. 3, shows, the building is rectangular in form. From the main entrance, A, the passageway, a, leads to the main weaving room, B. On the left side of this passageway is the office b, store and receiving room, c, and wardrobe, D. The latter also forms a passageway from the main weaving room out of doors. At the right of the passageway, a, is the shipping room, E, and yarn storage room, F. Room h is occupied by four winding machines of 80 spindles each. The yarn after being wound in this room is carried to the four warping machines, n, in the weaving room, B, where the warps are dressed and beamed, and then taken to the looms.

The looms, as shown in the plan, are located in a shed, 153 feet long and 106 feet wide. The outside wall is 20 inches thick and the hollow iron posts supporting the roof are 9 inches in diameter, the iron being ¾ inch thick. These supports are separated by a distance of 19 feet in one direction and 18 feet in the other direction. As shown by Fig. 12, these posts have brackets 10 feet from the floor supporting the iron beams running lengthwise of the room. At suitable places are fastened cross beams for supporting the jacquard frame work.

The posts extend above the brackets and support an iron roof, the construction of which is shown so clearly in Figs. 8, 9, 10, 11 that no further description need be given. A portion of

the 154 looms are at present hand looms, but these will probably be displaced gradually by power looms. The first three rows of looms shown in Fig. 3 are for the jacquards.

The looms in each alternate room have a reed space of 30 inches; the looms in the intervening rows have a reed space of 34 inches. The space at the end of the room next to the main entrance is reserved for the preparing machinery. At the corner of the room are four winders, m adjoining the four warpers n, six filling winders of



32 spindles each are located on the other side of the warpers and near the main entrance; the remaining space is used for drawing in, etc.

The small ell at the other end of the weave room is used for an inspector's perch and work bench. The weave room is 13 feet in height and the hollow pillars are used as ventilators. At the right of entrance a, is a room for warming the lunches of the operators. Adjoining room h are closets for both sexes.

The repair shop, G, is equipped with a lathe, g^1, planer, g^2, drill, g^3, polishing machine, g^4, and bandsaw, g^5.

Electricity is used for driving all of the machinery. The power house, C, is equipped with an alternating current generator for the production of 100 kilowatts which is sufficient for 200 looms. This generator has a stationary armature and revolving magnet. The magnet has 12 steel poles and the exciter is connected to the extension of the generator shaft. This generator is driven by a compound engine, as shown in the plan, and the magnet serves as a balance wheel.

The three horse power triple phase motor with spur gear, Fig. 13, is used for driving the looms, and the small raw hide gear is keyed to the motor shaft and connected direct with the driving gear of the looms. The latter has a speed of 180 to 200 rev. per minute. The loom motor is run at a constant speed and variations are made by changing these gears.

As shown at Fig. 14, the motor is supported partly by the spur gear shaft and partly by two spiral springs. These springs relieve the motor from the unavoidable jar of the loom.

The stopping or starting of the loom is effected by a switch fastened to the loom, where it is operated automatically so that the loom is stopped when a thread breaks.

The wires are located underground in cement conduits. The advantages of electric power for silk weaving

mills consist in the convenience of power transmission and in the improved quality of goods. The looms run very smoothly reducing the breakage of the yarn and imperfections in the goods.

A view of the weave loom, Fig. 12.

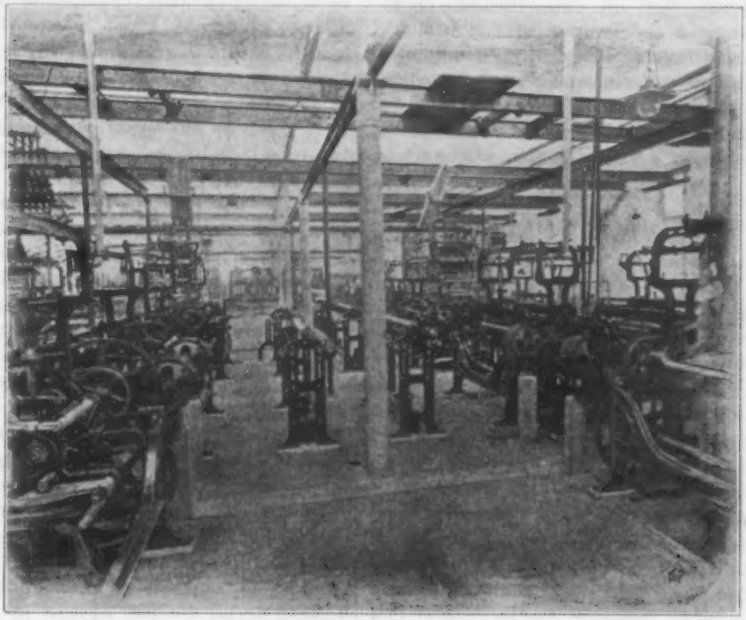


FIG. 12.

is free except where the jacquard apparatus is located.

As no heavy shafting for the transmission of power is required, the roof walls and supporting pillars can be made lighter and consequently cheaper.

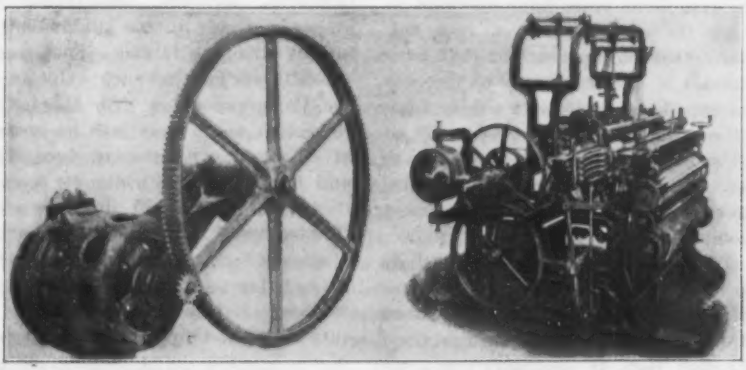


FIG. 13.

FIG. 14.

shows the simple manner in which the power is transmitted to the looms. The light is not obstructed by numerous belts, and the space next the roof

Fig. 1 shows the front elevation of this mill. Fig. 2 is a sectional view of the power house and weave room, showing both jacquard and harness

looms. Fig. 4 is a sectional view of the boiler house, D. The chimney is shown at E, Fig. 3. Fig. 5 is a sectional view of the winding room, showing the location of the winders and adjoining closet. Fig. 6 is an elevation of the weaving shed; Fig. 7 is a sectional view of the same. The dimensions are given in millimeters. —Uhland's Technische Rundschau.

The Exhibit of Fabrics at Rouen.

The U. S. consul at Rouen has made an interesting report upon this Exposition, from which we make the following extracts:

The silk industry was introduced into France from Italy at the beginning of the fourteenth century, when discontented Italian weavers established themselves at Lyons. In the sixteenth century the industry was introduced on an extended scale, and in 1750 France surpassed Italy, and has since kept the position of leader.

Today, however, the success of the United States and other countries in all the finer lines of goods points to a probable crisis for this industry in France. All that has gone to make the United States foremost in other respects—the same causes that for the last three years have operated to place its consumption of raw silk above that of France, and that have enabled it in forty years to increase the production of its own supply from 15 per cent. to 85 per cent.—will, in all probability, enable it some day to sell silk piece goods, embroideries, and ribbons in Paris, Berlin, and London.

The United States seems destined to gain the supremacy over France in the silk industry, as France obtained it over Italy in the eighteenth century. At that time, it was simply the triumph of newer and brighter ideas, of more perfect means of intercourse, and of greater activity and more daring diversity.

When the reeling of the Orient is made to conform to American looms and its raw silk is exported direct, instead of via France, there to be refinished, rebranded, and re-exported, it can hardly be doubted that the United States will have advantages to counter-balance those possessed by France—cheap and patient manual labor, artistic taste, and industrial skill.

So far, the raw silk going to the United States has been the Frenchman's gain and the American's loss. This extra cost of reshipment and the increase of freight rates by longer routes only defers the day of our supremacy in silk manufacturing.

French manufacturers are already realizing the danger. Some have removed their plants to the United States, to take advantage of our better industrial conditions; the Lyons Chamber of Commerce demands, fruitlessly, free importation of raw material; French journals call attention to the fact that although the United States did not succeed in acclimatizing the manufacture of silk until near the close of the civil war, it is now pressing France for first place.

One of the most significant proofs of this fear is the interest that French industrial societies are trying to arouse, not only in the silk industry, but in all other fabrics. Special attention was paid to such exhibits at the Paris exposition. On the 1st of November next, there will be opened at Nims an exposition of decorative and industrial art, while at present there is being held in this city (Rouen), the centre of the French "indienne," or calico, trade, an exposition of arts for the decoration of fabrics. Evidently the purpose of this exposition by the Rouennaise is not to make a grand display, complimentary to the superiority of their textile fabrics, but to stimulate an activity which will keep pace with foreign competition.

POWER DEPARTMENT

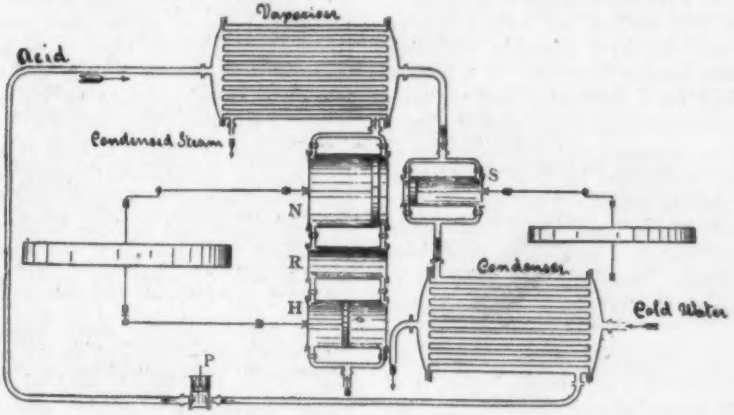
The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

A Cold Steam Engine.

In the ordinary type of steam engine there is a large loss of heat in the exhaust steam, whether the exhaust be carried to the open air or condensed.

An engine is now in operation at the Charlottenburg, Ger., Technical High School, which utilizes this heat to convert liquid sulphurous acid into vapor; this vapor is then used in an auxiliary engine for the production of power in the ordinary manner.

From the low-pressure cylinder, N, the exhaust steam passes into the surface condenser, called in the diagram the "vaporizer." In this vaporizer, or condenser, the cooling medium used, instead of water, is liquid sulphurous acid (H_2SO_3), which has a boiling point so low that it is immediately decomposed by the heat of the exhaust steam, whereby the sulphur dioxide gas (SO_2) is liberated, which passes into the cylinder of the auxiliary engine, S, where its work is done as in an ordinary steam engine.



PLAN OF A "COLD STEAM" ENGINE.
H—High Pressure cylinder. R—Receiver. N—Low pressure cylinder.
S—Cold steam cylinder. P—Pump.

The name, "cold steam engine," is derived from this acid vapor, which has a temperature much below that of steam from water. This engine was described by Commercial Intelligence over a year ago. Experience with the first machine demonstrated certain defects, which the builders have sought to remedy in the engine now at Charlottenburg.

Our illustration shows the manner in which the working parts are arranged. H and N represent the high and low pressure cylinders of an ordinary compound steam engine.

After passing through this cylinder, the sulphurous vapor enters the surface condenser, around the tubes of which cold water flows as in an ordinary steam plant. Here the sulphurous vapor is condensed to liquid and is forced by the pump, P, back into the vaporizer, where it begins its cycle again, the same SO_2 being used over and over again indefinitely.

There are therefore, in fact, two condensers, the first serving, as it were, as a boiler or steam generator for the auxiliary engine; this boiler, instead of being fired by coal, obtains

all its heat from the exhaust of an ordinary steam engine, and, instead of converting water into steam, evaporates a liquid which has a far lower boiling point.

The engine at Charlottenburg has a cold-vapor cylinder of 10½-inch bore and 19½-in stroke, which is attached to a 150-horse power triple-expansion Gorlitz engine of high efficiency, which is regularly employed at the school for electric lighting and experimental purposes. The engine is of an improved modern type, the high and intermediate pressure cylinders being placed tandem and horizontal, while the low-pressure cylinder is vertical, and all three act upon the same crank and driving shaft.

The cold-vapor cylinder is made of cast iron covered, not with a heating jacket, but with a simple sheet-iron casing packed with felt. It is proportioned for a maximum working pressure of 215 pounds per square inch.

The vaporizer and condenser are of iron, cylindrical in form, and about 10 feet in length. They are set in a steel frame, one above the other. Both contain a system of tubes very carefully made and fitted, so as to prevent the leakage of water or dioxide.

The vaporizer, which fulfils the function of a cold-steam boiler, is of 34⅝ inches internal diameter, and has about 753 square feet of heating surface, by which the exhaust steam of the engine acts upon the liquid dioxide and converts it into vapor. It then passes through the cold vapor cylinder and returns to the condenser, which has an internal diameter of 41 inches, and about 720 square feet of cooling surface.

Valves are set in both pipe systems, so that sections can be cut out for examination and repair without withdrawal of the dioxide. The feed pump is worked by an eccentric on the main shaft, and requires only three-fourths of 1 per cent. of the developed power of the engine.

Such an arrangement of the different parts is of course merely arbitrary, and was adopted to secure the utmost economy of space, but the condenser and vaporizer may be placed in any desired position convenient to the engine and best adapted to local conditions.

Thus constituted and arranged, the waste-heat engine at Charlottenburg has been run almost continually since the end of September, 1900, without accident or any serious difficulty. During the hours when the storage batteries are being charged, it has been run up to a speed of 168 revolutions per minute.

The load has been a direct-connected continuous-current dynamo, with a rated output, at 150 revolutions, of 400 amperes and 240 volts, which, as the official report states, was sometimes over-loaded as high as 40 per cent, as a means of testing the increased capacity obtained by the addition of the waste-heat cylinder.

The result, in respect to both steam consumption and electrical output, has been measured by the highly perfected instruments and methods in use at the school. As a net result, the waste-heat engine delivered an additional energy equal to 34.2 per cent. of that of the triple-expansion steam engine.

Its economy is measured by the fact that, when working, it enabled the steam consumption to be reduced from 11.2 pounds to 8.36 pounds per indicated horse-power hour, a very successful result when the smallness of the unit is considered. The same proportionate saving in large engines of 2000 to 3000 horse-power would constitute a highly important economy in these days of costly fuel.

As sulphur dioxide gas is deleterious to the lungs, it was necessary to make all joints and packing—particularly that of the valve and piston rods—so perfect that however great the pressure, none of the dioxide gas or liquid should escape.

In the presence of air or water, the neutral dioxide rapidly oxidizes into sulphuric acid (H_2SO_4), which attacks

iron and other metals. It is therefore necessary that the whole apparatus shall be air and water tight, and this, to resist an internal pressure of 150 pounds per square inch, requires good materials, first-class workmanship, and intelligent supervision when in operation.

The surface condenser, which is required to transmit great quantities of heat energy with a minimum loss of temperature, also required some special adaptation to the treatment of sulphur dioxide vapor.

Modern Boiler Problems.

A paper read before the meeting of the New England Cotton Manufacturers' Association at Niagara Falls, by Col. E. D. Meier.

(Continued from October.)

The man who designs must be held responsible for the results. Hence, when special furnaces, automatic stokers, or artificial draft are required, a further division of responsibility must follow, both to avoid mistakes and injustice, for in the physical as in the spiritual world every one of us is accountable for his own deeds, and requirements of contracts in defiance of this natural law are more apt to lead to lawsuits than to correct design and satisfactory plants. Arbitrary specifications as to quantity of heating surface or grate area may lead to deficiency for one or surplusage for another.

A wise old saw is to always insist on the largest possible heating surface. Yet there are many examples of increased steaming capacity resulting from removal of an entire vertical row of tubes in a horizontal tubular boiler, the increased circulation more than making up for the surplus heating surface which clogged it before. And the experiment on the Illinois Central R. R. of some 15 years ago proved that a combustion chamber obtained by sacrificing ten times its own heating surface in the shortened tubes resulted in increased capacity and economy. And who is not familiar with the futile attempts at correcting too great tube area in fire tube boilers by means of retarders placed in the tubes because the gases "short circuited" to the flue, refusing to recognize as heating surface much so called in incorrect design. Similar effects have been noted in water tube boilers.

In the old days we used to hear much talk of "effective" heating surface, and there were empyrical guesses stated as facts by "authorities" as to the relative effectiveness of vertical, horizontal, upper and lower segments of heating surface. Nowadays we recognize as engineering facts only such data as rest on actual experiments and observations and on a large number of these.

In this way we have learned that circulation both of the water and the gases increased the effectiveness of heating surface, and is hence as important a consideration as the quantity of the latter.

Every builder of water tube boilers recognizes this circulation as a necessity and provides for it in details of design. The relation of areas for circulation to amount and location of heating surface and to grate area and draft must be found by every builder for his own type before he can confidently design his boiler to meet given requirements.

To impose the ratios found by one on any and all others by specification is not engineering but ill considered tyranny. The greater the difference between the temperatures of water and gases, the more rapid the transfer of heat and hence the greater the effectiveness of heating surface. When this difference drops to less than 200 degrees Fahrenheit the value of additional heating surface in the boiler becomes nil and the economizer finds its proper place to become useless in turn when this difference again sinks below 200 degrees.

A well designed furnace with enough, not too much or too little air, a firebrick combustion chamber in

which air and gases can mingle at high temperatures favoring complete combustion before cooling both by contact with heating surface become then necessities.

This conclusion may be plainly stated thus. We must provide grate and draft enough to burn a sufficient quantity of the coal which is to be used. If we do this the flue areas and heating surface need not differ materially from our previous best standards.

Therefore, to state that for a poorer coal you must have a larger boiler argues a confused view of the problem. There are hundreds of tests available to guide us in estimating the quantity of coal necessary to produce the required amount of steam. From them we learn also how much we can burn per square foot grate.

After full consideration the American Society of Mechanical Engineers recommended as a basis for a fair rating of boilers, their capacity at good economy without forcing fires with the best coal ordinarily sold in the local market, and with a margin of one-third over this rating when forcing fires, with draft at least one-half inch water column.

When slack coal, screenings, run of mine, pea, buckwheat and rice coal are the fuels selected, a boiler rated as above would fall far below this rating in actual service, and the erroneous statement above referred to is heard.

We find that with best bituminous coal we can count on 10¼ U. E. per pound; with anthracite egg on 9½; with pea coal on 8½; with buckwheat 7½; with rice coal 7; all for good coal of these kinds running less than 20 per cent. ash.

We know that in practice we burn, per square foot grate, 24 pounds of good bituminous coals, 20 of anthracite egg, 18½ of pea and 16½ of buckwheat and 15 of rice coals. For these latter we must count on at least seven-tenths inch draft and may not go much over one inch for fear of blowing much unburnt coal off with the ashes. Putting these quantities together, and retaining for the nonce the unfortunate designation of H. P., we find that we can count per square foot grate on 7.1 H. P. for best bituminous; 5.8 for egg; 4.4 for pea; 3.6 for buckwheat; and 3 H. P. per square foot grate for rice coal. Hence if you have a 300 H. P. boiler every day giving its rating on bituminous coal and you change to buckwheat coal, you must not exact more than half rating unless you double your grate area. But the boiler remains as before a 300 H. P. boiler.

As there is a practical limit to the length of grate which a fireman can manage, it finally becomes a question of width of furnace. And in placing the proper amount of heating surface over it, we come to a low, broad boiler for the low grade anthracites and a high narrow boiler for the high grade bituminous coals.

Remember that anthracite coal was barred from locomotives by this consideration until the invention of the Wooton fire box made a wide grate possible.

To change then from bituminous coal to buckwheat or rice coal involves much more than a mere consideration of relative prices per ton. It becomes a question of kind and length of grate bars, width of furnace and amount of draft, and means, therefore, a permanent change in the boiler plant.

Much ingenuity and experiment has been devoted to the development of automatic stokers for these low grade anthracite coals and as lengths of grate two or three feet more than for handfiring have been successfully handled and combustion up to 22 pounds accomplished, they present the possibility for permanent adoption of the cheaper fuels without increase or complete change in the boiler plant.

Closely allied to questions of design are the materials and methods of construction. These have been steadily

improved and made fit to meet the most exacting modern demands.

Boiler iron is a thing of the past. Tensile strengths of 48-50000 pounds in charcoal iron have risen in best homogeneous steel to from 60-65000 pounds with ductilities even greater than those formerly attained. With such plate and small drums almost any pressure can be met.

Since 1889 the American Boiler Manufacturers' Association has been active in the work of improvement of boiler materials, keeping in close touch with the steel makers. Judiciously demanding no more than good practice could furnish but insisting on actual physical and chemical tests in place of relying on mere brands, no matter how celebrated, they found that the steel makers, in their natural anxiety to fill these moderate specifications generally exceeded them.

From the start cast iron was condemned as an unfit metal for any part of a boiler subject to tensile stress. And good flange steel has taken the place of all parts formerly made of cast metal, the only excuse for the use of which was the ease and cheapness with which it could be formed into more or less intricate shapes without skilled labor. But with hydraulic presses and drop forging even this excuse falls, and the better material should be insisted upon.

During eight years committees of this Association were busy in collecting facts regarding the best practice in manufacture and workmanship of the leading boiler works of the United States and Canada; included as part of this work was the testing to destruction of seven drums or shells built by as many different firms. A committee was appointed at the Philadelphia meeting in 1897 to formulate the best modern American boiler practice in a set of rules.

Copies of these rules can be obtained of the Secretary of the Association. They furnish a safe basis for specifying the best construction for a contemplated plant, since they ensure the use of modern American materials, tools and methods, developed under existing conditions of high pressures and high furnace temperatures.

The exigencies of modern steam practice demand concentration of the power producing plant in minimum space.

The grate area being limited in length by practical conditions, we must utilize every inch of width. With low grade fuels this width becomes the measure of the power which can be produced. Heating surface must be disposed with reference to this width. For this the watertube boiler is most adaptable. Internally fired or underfired shell boilers have not this flexibility of arrangement.

For high pressures, the best, most tenacious and most ductile materials must be used. There are defined in A. B. M. A. specifications which cover also the best practice as to constructive details.

Small and mainly cylindrical parts with all pressures internal best withstand the high tension of steam now demanded. Large shells present greater structural difficulties and collapsing stresses must be avoided. This again militates against fire tube boilers where external pressure subjects the tubes to deformation and collapse and where larger units require great diameter of parts, while the water tube boiler meets all these requirements.

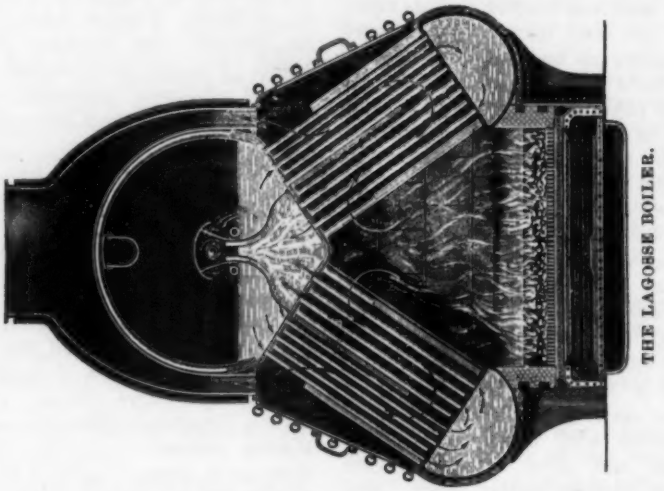
Greatest economy requires high furnace temperatures attainable only where the cooling of the gases by the heating surfaces can be deferred till the combustion is completed. This excludes internally fired and underfired shell boilers and gives preference to the water tube type.

Rapid steaming requires large and effective liberating surface presented in almost ideal conditions by the unobstructed and rapidly moving water level of the sub-horizontal water tube boiler; vertical boilers of any type are precluded by this consideration.

The Lagosse Boiler.

This boiler was designed in France with the view of combining the advantages of both the open and the tubular boilers, while avoiding the objections to which each of these types is subject. It is composed of a cylindrical boiler and two other smaller boilers located below the first one, to which they are connected by two sets of straight tubes of the same length. Our illustration shows a type of this boiler built for marine work; the essential principles, however, are the same as those of the boilers used in industrial establishments. The lower part of the upper boiler is made with two flat sheets in the form of a letter V. Each of these sides is parallel with the corresponding flat side of the lower boiler. The tubes thus form an inverted letter V. The length of the tubes depends upon the size of the upper boiler. They are divided into two sections, front and rear, and separated by a bridge wall.

An improvement, lately made, consists in the application of partitions in the upper boiler to increase the circulation of the water. The steam generated in the tubes next to the fire rises to the upper boiler, and the water carried along with this steam is guided by these partitions to the rear tubes, through which it is carried to the lower boiler, thus causing a constant circulation and increasing the economy of the generator. The heated gases from the fire enter between the front tubes at the upper part and passing down are conducted to the rear set of tubes, through which they pass upwards to the chimney. It is claimed that this boiler generates steam at a very low expenditure of fuel, and is easily cleaned and kept in repair. One of these double boilers, having 1474 sq. feet of heating surface, was recently installed at Nancy. The contract required that 5940 lbs. of water be evaporated per hour. La Revue Technique gives the results of the tests as follows:



THE LAGOSSE BOILER.

Water evaporated per hour, 7150 lbs.

Water evaporated per hour, per sq. foot of heating surface, 4.85 lbs.

Water evaporated per pound of coal, 9.88 lbs.

DYEING DEPARTMENT

Dye Recipes for November.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Recipe No. 161.

Black on Woolen Cloth.

Naphtole Black 2 B on 100 lbs. of woolen cloth.

Prepare the dye bath with

10 lbs. Naphtole Black 2 B.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

20 lbs. Glauber's Salt.

5 lbs. Sulphuric Acid.

Enter the pieces and bring to a boil coloring at boiling temperature for one hour.

This color produces a bright blue black shade. It is soluble, penetrates well and dyes level and its fastness to alkali, acid, rubbing and perspiration is good. Its principal features are its excellent fastness to water and light. It has but moderate fastness to milling.

Recipe No. 162.

Blue on Worsted Yarn.

Criterion Blue on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Criterion Blue.
(F. E. Atteaux & Co., 176 Purchase St., Boston.)

3 lbs. Sulphuric Acid.

10 lbs. Glauber's Salt.

Enter the yarn at 170° F., bring to a boil and dye at a boil for one hour, exhausting the bath if possible.

Criterion Blue produces a pleasing shade of blue possessing good fastness.

Recipe No. 163.

Blue on Worsted Yarn.

X L Blue on 100 lbs. of worsted yarn after-treated with chrome.

Prepare the dye bath with

2 lbs. X L Blue.
(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)

5 lbs. Acetic Acid.

Enter yarn at 170° F., bring to a boil and dye at a boil for one hour, exhausing the bath if possible.

Wash, and after-treat for twenty minutes in a boiling bath containing

3 lbs. Potassium Di Chromate.

X L Blue, especially when after-treated with chrome, gives shades extremely fast to light, scouring, and milling.

Recipe No. 164.

Bluish Red on Worsted Yarn.

Guinea Bordeaux B on 100 lbs. worsted yarn.

Prepare the dye bath with

2 lbs. Guinea Bordeaux B.
(Berlin Aniline Works, 72 Front St., New York.)

10 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter the yarn at 180° F., bring to a boil and dye at a boiling temperature for one hour.

Guinea Bordeaux B produces a bright shade of bluish red with good fastness.

Recipe No. 165.

Blue on Woolen Cloth.

Brilliant Wool Blue B extra on 100 lbs. of cloth.

Prepare the dye bath with

3 lbs. Brilliant Wool Blue B extra
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

20 lbs. Glauber's Salt.

5 lbs. Sulphuric Acid.

Enter the yarn and bring to a boil, dyeing at boiling temperature.

Brilliant Wool Blue B extra is distinguished for its very clear and bright shade. This product is possessed of excellent dyeing properties as regards level coloring. It is remarkable for fastness to rubbing.

Recipe No. 166.

Red on Cotton Yarn.

Benzo Purpurin 4 B Ex on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Benzo Purpurin 4 B Ex.
(Victor Koechl & Co., 122 Hudson St., New York.)

50 lbs. Sodium Chloride.

½ lb. Soda Ash.

Enter at 170° F., bring to a boil and dye at a boiling temperature for one hour.

Benzo Purpurin 4 B Ex differs from the ordinary product in being much stronger, without a corresponding increase in cost.

Recipe No. 167.

Bright Blue on Cotton Yarn.

Direct Fast Blue 3 G on 100 lbs. cotton yarn.

Prepare the dye bath with

2 lbs. Direct Fast Blue 3 G.
(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

20 lbs. Common Salt.

Enter the yarn at 180° F., and work while raising to the boil, continuing the boiling for one hour.

Direct Fast Blue 3 G gives very bright and fast shades of blue, which possess great purity of shade and giving a green tone which for some purposes is preferable to reddish tones. Its fastness is excellent and it can be rendered fast to washing by an after-treatment with copper sulphate. It is a good self color, and can be used for compound shades, and is well adapted for hosiery dyeing.

Recipe No. 168.

Black on Cotton Yarn.

Bengal Deep Black D on 100 lbs. of cotton yarn.

Prepare the dye bath with

8 lbs. Bengal Deep Black D.
(Sykes & Street, 85 Water St., New York.)

40 lbs. Common Salt.

Enter yarn at 170° F., bring to a boil and dye at a boiling temperature for one hour.

Rinse and diazotize in a cold bath made up with

3 lbs. Sodium Nitrite.

12 lbs. Hydrochloric Acid (32° Tw.)

Work 15 minutes, rinse and enter immediately in a cold developing bath made up with

1 lb. Beta Naphthol.

dissolved in

1 lb. Caustic Soda Solution 76° Tw.

Work 15 minutes, then wash thoroughly and dry.

Bengal Deep Black D when dyed and developed in this way produces an excellent and fast shade of black, and when used in a standing kettle the percentage may be greatly reduced.

Recipe No. 169.

Deep Violet on Cotton Yarn.

Methylene Violet 3 R A on 100 lbs. cotton yarn.

First mordant the yarn with tannin as follows: Enter in a bath containing 4 to 6 pounds of tannin or an equivalent of light sumac extract, turn for twenty minutes at this temperature, and then sink for twelve hours. Lift, wring without washing, and work for 20 minutes in a cold bath containing

2 lbs. Antimony Salt.

Wash thoroughly and dye in a bath containing

2 lbs. Methylene Violet 3 R A.
(Victor Koechl & Co., 122 Hudson St., New York.)

5 lbs. Acetic Acid.

Enter the yarn cold, work cold ½-hour, and bring to a boil during ¾ of an hour, and then dye at a boil ½-hour longer.

Methylene Violet 3 R A possesses good fastness to washing, light, and soap.

Recipe No. 170.

Black on Worsted Yarn.

Luzon Black on 100 lbs. of worsted yarn.

Prepare the dye bath with

5 lbs. Luzon Black.

(F. E. Atteaux & Co., 176 Purchase St., Boston.)

4 lbs. Sulphuric Acid.

15 lbs. Glaubers Salt.

Enter yarn at 180° F., bring to a boil and dye at this temperature one hour, exhausting the bath if possible. It is well to add the acid in several portions rather than all at one time.

Luzon Black gives a full shade of black possessing good fastness to all the common color-destroying agencies.

Recipe No. 171.

Cardinal Red on Cotton Yarn.

Buffalo Cardinal 7 B on 100 lbs. cotton yarn.

Prepare the dye bath with

3 lbs. Buffalo Cardinal 7 B.

(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

30 lbs. Common Salt.

Enter yarn at 180° F., bring to a boil and dye at a boil for one hour.

Buffalo Cardinal 7 B possesses all the characteristics of the direct cotton colors, gives a particularly bright and bloomy shade, and can be used in light percentages for a pink.

Recipe No. 172.

Blue on Cotton Yarn.

Immedial Sky Blue on 100 lbs. cotton yarn.

Prepare the dye bath as follows:

For Starting Kettle:—

40 lbs. Immedial Sky Blue.

(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)

6¾ oz. Sodium Sulphide per 10 gallons of liquor.

4½ oz. Soda Ash per 10 gallons of liquor.

3 oz. Turkey Red Oil per 10 gallons of liquor.

5 lbs. Common Salt per 10 gallons of liquor.

For Standing Bath:—

10 lbs. Immedial Sky Blue.

4½ lbs. Sodium Sulphide per 100 lbs. goods.

1 lb. Soda Ash per 100 lbs. goods.

¾ lb. Turkey Red Oil per 100 lbs. goods.

12 lbs. Common Salt per 100 lbs. goods.

Dye at about 85° F. for ½ to ¾ of an hour, according to depth of shade required squeeze off one stickful at a time, wring quickly and as evenly as possible, and rinse after ½-hour exposure to the air, first cold then warm.

An after treatment for twenty minutes in a bath at 175° F., made up as follows, greatly increases the fastness to light and washing:

1½ lbs. Potassium Bichromate.

1½ lbs. Copper Sulphate.

3 lbs. Acetic Acid.

Immedial Sky Blue produces when dyed as above, an excellent blue, possessing great fastness to light and washing.

Recipe No. 173.

Blue on Cotton Yarn.

Immedial Sky Blue on 100 lbs. cotton yarn.

Prepare the dye bath as follows:

For Starting Kettle:—

20 lbs. Immedial Sky Blue.

(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)

5¼ oz. Sodium Sulphide per 10 gallons of liquor.

4½ oz. Soda Ash per 10 gallons of liquor.

2¼ oz. Turkey Red Oil per 10 gallons of liquor.

2½ lbs. Common Salt per 10 gallons of liquor.

For Standing Bath:—

5 lbs. Immedial Sky Blue.
(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)
3½ lbs. Sodium Sulphide per 100 lbs. of goods.
1 lb. Soda Ash per 100 lbs. of goods.
½ lb. Turkey Red Oil per 100 lbs. of goods.
7 lbs. Common Salt per 100 lbs. of goods.

Dye at about 85° F. for ½ to ¾ of an hour, according to depth of shade required; squeeze off one stickful at a time, wring quickly and as evenly as possible, and rinse after ½-hour's hanging in the air. First cold and then once warm.

An after treatment for twenty minutes in a bath at 175° F. made up as follows, greatly increases the fastness to light and washing:

1½ lbs. Bichromate of Potash.
1½ lbs. Copper Sulphate.
3 lbs. Acetic Acid.

Immedial Sky Blue produces, when dyed as above, an excellent blue, possessing great fastness to light and washing.

Recipe No. 174.

Garnet on Cotton Yarn.

Buffalo Garnet R on 100 lbs. cotton yarn.

Prepare the dye bath with
3 lbs. Buffalo Garnet R.
(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)
30 lbs. Common Salt.

Enter yarn at 180° F., bring to a boil, and dye at a boil for one hour.

Buffalo Garnet R possesses all the characteristic properties of the direct cotton colors, and is very serviceable in the production of dark colors, giving cardinal to maroon shades.

Recipe No. 175.

Light Blue on Cotton Yarn.

Phenidine Blue No. 5076 on 100 lbs. cotton yarn.

Prepare the dye bath with
½ lb. Phenidine Blue No. 5076.
(Sykes & Street, 85 Water St., New York.)
20 lbs. Common Salt.

Enter yarn at 170° F., bring to a boil and dye at a boil for one hour.

Phenidine Blue No. 5076 is exceedingly useful in the dyeing of knitted fabrics.

Recipe No. 176.

Black on Worsted Yarn.

Alpha Black D on 100 lbs. worsted yarn.

Prepare the dye bath with
5 lbs. Alpha Black D.
(United Indigo and Chem. Co., 176 Federal St., Boston.)
5 lbs. Acetic Acid.
10 lbs. Glaubers Salt.

Enter yarn at 160° F., bring to a boil and dye at this temperature for one hour, exhausting the bath if possible.

Alpha Black D produces a full and fast shade of black, which stands an after chroming and also considerable scouring and washing without bleeding into the white.

It is particularly useful in dyeing woolen hosiery, piece goods, and hosiery yarn.

Diazotizing and Developing Method of Coloring Black Cotton Hosiery.

Among the methods used for dyeing hosiery a permanent black, none is more popular than the so-called diazotizing and developing method.

This process gives at a low cost a good, full black, fast to acids and absolutely non poisonous; it also has in its favor the fact that it never tenders the goods, and with such facility can this process be carried out that it is now preferred by many to the aniline oxidation methods.

The dyeing of blacks by this process can be carried on without an elaborate and costly apparatus. The entire equipment for a small plant need consist of but three tubs 8 by 3 by 3 feet, and one good hydro-extractor. Where a large quantity of

goods is handled, the dyeing is best done in a machine of the Delahunty or the Klauder-Weldon type, and by so doing the cost of labor will be reduced.

The method usually followed is as follows; the goods are wet out or scoured from one to two hours. They are then extracted and entered into a boiling bath, and worked one hour; this is called the "bottoming bath," and for each 100 lbs. goods there is added to the dyebath 5% dyestuff, 10% salt. This forms what is known as a standing kettle, and is to be kept for future use.

The goods are dyed a good dark blue in this bath; the dyer should keep a stocking out of this bottoming bath as a standard to match to, as it is essential in order to get the best results that the color of the goods in the bottom must be alike if the finished goods are to come out the same shade.

The stockings after being boiled in the dye bath one hour are raised, and the liquor allowed to drain back into dye-bath. They are then diazotized. This part of the process is carried out as follows: the goods are worked from 20 to 30 minutes in a cold bath, to which has been added for each 100 lbs. stockings 3% Nitrite Soda and 10% Muriatic Acid. They are then washed, raised and developed in a cold bath, to which has been added for each 100 lbs. goods 1% Phenylenediamine and 1% previously dissolved Soda Ash. The goods are then washed, extracted and sent to boarding room to be finished.

While this process is easy to manipulate, care must be taken to get the best results. If the stockings are dyed in boxes they must be poled well and the heels and toes drawn out, otherwise uneven and spotted stockings will result.

In a dye-house where machines are used, the goods are boiled out or scoured in the usual manner, and then extracted and dyed or bottomed in the dyeing machine at a boil for one hour, after which the dye is allowed to drain off into dye storage tank and the stockings then diazotized, washed, developed and again washed, making the process continuous, thus doing away with all needless labor.

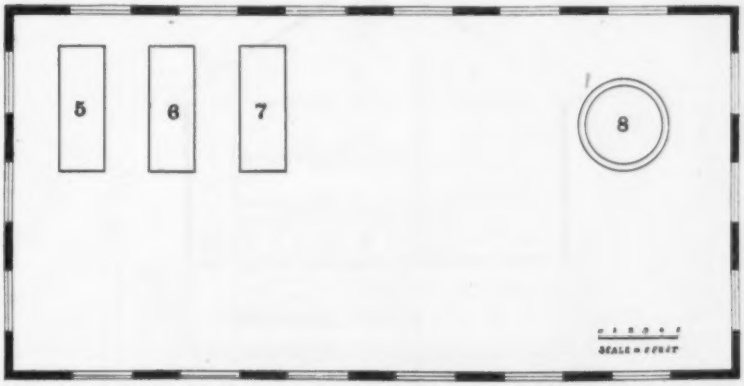


FIG. 1. No. 5. Boiling Out Tub. No. 6. Dye Tub. No. 7. Diazotizing and Developing Tub. No. 8. Extractor.

The dyer using machines should be careful not to run his dyeing machine at too great a speed, or to prolong the dyeing operation for too great a length of time. In either case the goods are apt to roll or knot and cause uneven dyeing, especially on long lengths of ladies' fine hosiery.

If tubs are used for this purpose, they are best made from good 3"

stock, and provided with a false bottom. The tub used for diazotizing and developing should have a good, large outlet, so that it can drain quickly, also a good sized water pipe, so that it can be filled quickly. These things may seem trifling matters to mention, but the delays caused by not having steam and water pipes of sufficient capacity add greatly to the cost of labor and also decrease production.

goods sent to dye house in "case lots" so that he may dye each case by itself and get each case the same shade. While separate dyeings are generally good matches, there is sometimes a variation that causes trouble and extra work sorting in finishing room.

We show two plans for the dye house. One is for a small plant, and calls for three boxes 8 by 3 by 3 feet and one hydro-extractor, see Fig. 1. The other plan, Fig. 2, is for

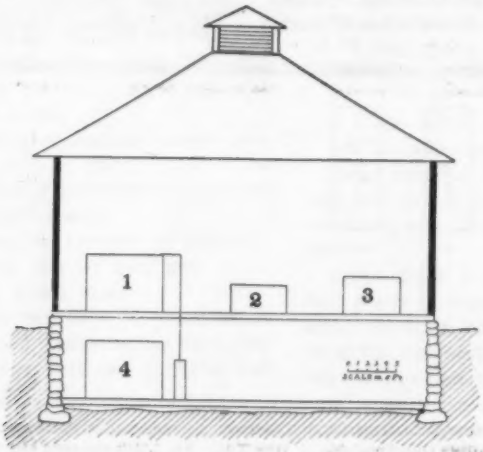


FIG. 2. No. 1. Dyeing Machine. No. 2. Extractor. No. 3. Boiling Tub. No. 4. Dye Storage Tank.

The extractor used should be of the largest size and of self-balancing type so that it will adjust itself quickly to the load. The cost of a large sized extractor will be more, but its greater capacity will soon pay for the extra cost.

The pump used should be of the centrifugal type, because it is easy to operate and does not get out of order. The connections between dye storage tank and the pump should be made up so that they can be easily and quickly disconnected, if it becomes necessary to do so.

The boiling keir should be of sufficient capacity to boil a batch as large as the machine can dye and there should always be one lot boiling out while another lot is being dyed.

The dyer should try and get his

a dye house of greater capacity and calls for one boiling out keir, a dyeing machine, a dye storage tank, a centrifugal pump and a hydro-extractor. In this plan the dye storage tank and pump are placed underneath the dye house floor; in dye houses where there is not room to do this, the dye storage tank can be placed overhead and the dye pumped up into tank, and when needed allowed to run back into dyeing machine.

ROGER WILLIAMS.

Photographic Designs on Print Goods.

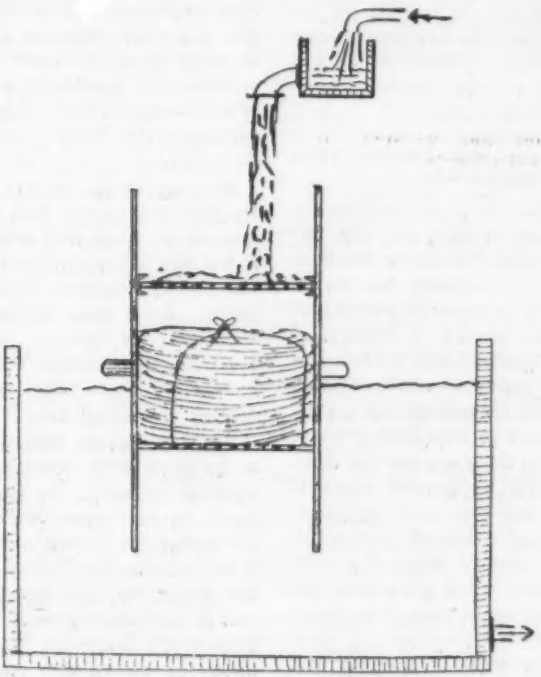
An interesting process of reproducing photographic designs on print goods is exhibited at the Rouen Exposition. The process was originally obtained in Germany by a German manufacturer, and has since been

combined with various French processes. The pattern is photographed in the ordinary manner, and from the negative so obtained a positive is made. This is applied to the printing roller, which has been previously coated with bi-chromate of gelatine, which is made insoluble by the light. Upon removing positive from the roller after exposure to the light, the gelatine, which is not insoluble, is dissolved by washing in water; this leaves the copper bare. The residue is carbonized by heating in a gas flame and then the copper is engraved by chemical oxidization in the ordinary manner. After removing the insoluble gelatine by polishing, the roller is ready for printing.

The Vanzeveren Machine for Coloring Worsted Top.

The accompanying illustration shows the Vanzeveren machine for coloring worsted top as it comes from the comb or gill box. It has been in use on the continent of Europe for fifteen years and possesses many advantages, among which is its extreme simplicity.

The liquor is forced through the stock at a very low pressure, as worsted top, as it comes from the comb, is in a fairly soft condition and easily absorbs liquids. The ball is tied with a string, as shown, and is then placed in a receptacle of suitable size provided with two false bottoms, one of which is removable. Each receptacle is suspended on two bearings, shown in the illustration, which permit the cylinder being turned upside down.



TOP DYEING MACHINE.

Above the machine is placed a trough, into which the liquor is pumped, and from which it is discharged through a pipe falling onto the upper part of the cylinder containing the stock. The dyeing liquid then passes through the material into the tub below, from which it is

pumped back into the upper trough, and the circulation thus maintained until the dyeing process is completed.

L'Industrie Textile, in a recent issue, shows eight shades colored on worsted top in this machine. The writer in this journal adds that personal acquaintance with the operation of this Vanzeveren machine for a number of years enables him to testify positively in regard to its merit. He states he has seen woolen yarn on bobbins colored black in a very uniform manner, the penetration of the dye being complete.

Shaded Woolen and Worsted Piece Dyed Goods.

Irregularities and unevenness in dyed fabrics is of more or less frequent occurrence, there being hardly a dyer but who occasionally has his attention drawn to a set of pieces that are coming up spotted or streaky, or which show unmistakable evidence of some sin of omission or commission that is directly responsible for the defect. There are periods during which the fates seem to be against the dyer, and his output of shaded goods is much above the normal. Let us examine the usual course of woolen material in its travels through a mill, and see if there is not some other department that might bear close examination.

Unless every trace of the yolk and smut is removed from the wool, difficulties may be met with during the subsequent mechanical operations. The greatest trouble is met, however, when the yarns in the gray are delivered to the yarn scourer, or after they have been woven into gray cloth, and are to be made ready for mordanting or dyeing.

Before any piece of goods is to be mordanted preparatory to being dyed with adjective, or is dyed with acid colors, it is necessary that it be completely freed from oils or soap, and the thoroughness of this scouring or cleansing process cannot be too often or emphatically insisted upon.

Oils, such as are generally made use of in the picker house, are usually applied to the raw stock in a warm or heated condition, and if they are not, they become very much warmed in passing through the various machines, and in this heated condition they become quite limpid or fluid, and are thus very readily absorbed by the wool fibres, that is, they soak into the fibre substance, and do not, as is usually supposed, coat the fibre surface as a lubricant; consequently, in order to enable the wool fibre to take up the mordant or dyestuff, it is absolutely necessary that every trace of this oil be removed.

Scouring should be done at as low a temperature, and with the least amount of soap and alkali possible. If too nigh a temperature be employed, the fulling operation will be anticipated. As a rule, the problem that confronts the scourer is not how much soap and alkali will the goods stand, but "how long can they be treated in a scour bath?"

We here suppose that the goods are to be dyed with either alizarines or logwood or both. In any case they must be previously mordanted with bichromate of potash and argols. If there remain any traces of soap in the goods, the acid mordanting bath will at once decompose it with the liberation of a fatty acid, which deposits upon the goods, and cannot be removed by any subsequent treatment. Of course, wherever this deposit lodges, it acts as a resist to the mordant, and a lesser amount of chromium is fixed at that point; consequently, the goods when emerging from the dyebath show lighter at that point than elsewhere. This irregularity does not appear in spots, but rather in shady blotches frequently extending over wide areas, and not confined to any one part of the piece. This defect can be always guarded against by properly washing the goods after scouring, with warm water.

"BETA NAPHTHOL."

(To be continued.)

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Huntsville. The buildings for the Eastern Manufacturing Co. have been completed. The engine and boilers are being placed. Machinery is expected shortly and will be immediately installed.

—*Connecticut, Conantville. The mill property at this place, formerly operated by the Natchaug Silk Company, has been purchased by Mr. M. Pollack (of New York). Mr. Pollock has been operating a small thread mill at Willimantic, but on account of increase of plant, will remove to new location, as soon as necessary repairs, etc., are made.

—*Georgia, Augusta. Clarke & Co. expect to have their new mill, upon which work is under way, in operation during December. This plant, which is replacing one destroyed by fire, will have equipment of about 3500 spindles, with all the latest improved machinery.

—*Georgia, Eastman. The Eastman Cotton Mills advise us that they will start up about December, with 3000 spindles and 100 looms. The additional machinery, which they contemplate installing in 1902, will consist of 7000 spindles and 260 looms.

—*Georgia, Middleton. Arrangements are being made to start work on construction of buildings for the Bannockburn Mills, in which Geo. C. Grogan (Elberton, Ga.) is interested.

—*Georgia, Social Circle. Work has been about completed on the buildings for the Social Circle Cotton Mills. Machinery, expected to arrive in about two weeks, will be set up with all possible speed. Plant will have an equipment of 5000 spindles and 160 dobby looms, for making fancy cottons and Bedford cords.

—*Massachusetts, Westboro. The new tape mill established here by Wright & Mason, as the Westboro Weaving Co., expects to be in operation November 1st. About 20 looms, with other necessary machinery will be operated.

—*Mississippi, Yazoo City. The Yazoo City Cotton Mills contemplate having the mills in operation about the middle of November. The machinery, which consists of 5120 spindles and 288 twister spindles, is being placed in position. For the present only yarns will be made.

—*Mississippi, Yazoo City. The machinery is arriving and will soon be set in position in the Yazoo City Cotton Mills, which are being pushed to completion. This mill will make 40s and 50s, two and three ply warp yarn. The entire machinery equipment is being furnished by the Howard & Bullough American Machine Co., Pawtucket, R. I.

—*North Carolina, Cameron. The Cameron Cotton Mill Co., capitalized at $50,000, with J. W. Scott, president and W. G. Robertson, treasurer and general manager, proposes having the plant ready to start operations early in November, possibly the 1st. Mill will have 2000 ring spindles.

—*North Carolina, Cooleemee Falls. The Cooleemee Cotton Mills have completed installation of 1200 looms in the plant, which has been running with about half its full complement. High grade brown sheetings and drills for export and domestic use are made.

—*North Carolina, Oxford. The machinery is being installed in the Oxford Cotton Mills. The engine and boilers are somewhat delayed on account of the recent steel workers' strike.

—*North Carolina, Charlotte. The Elizabeth Mills are nearly completed, machinery being placed in position. It is thought that the plant will be in full operation about November 15th. They will start with 5000 spindles, making yarn.

—Rhode Island, Providence. The American Shoe Lace Company will soon start operations in the Armington Simms Building. Machinery is being installed.

—*South Carolina, Newberry. Contract has been awarded for erection of the new 10,000 spindle mill for the Mollohon Mfg. Co., and work will proceed at once on construction.

—*South Carolina, Williamston. The main building of the Williamston Cotton Mill Co.'s plant has been completed and work will start at once on installing 5000 spindles and 150 looms, half of the mill's capacity. It is thought that the plant will be ready to start operations in about 60 days.

—*Tennessee, Jackson. Nearly all the machinery in the Jackson Fibre Company's mill is in operation.

—Texas, Beaumont. A. D. Childress, secretary of the Beaumont Oil Exchange and Board of Trade, is interested in prospect for establishing a cotton mill here. The present plan is to obtain subscriptions to the amount of $100,000. Are inviting correspondence with a practical cotton mill manager, who can invest some money in the enterprise, to identify him in the active management of the plant.

—*Texas, Cuero. The Cuero Cotton Mill advises us that they will receive bids up to the 18th of November for the complete equipment of machinery, tools, etc., for their mill, on basis of 5000 spindles and 160 looms. Specifications may be had on application. Mill reserves all rights.

—*Virginia, Fries. The mill and power plant of the Washington Cotton Mills to be put in operation here, is being developed. This is the plant of which Col. F. H. Fries is president and which will have 40,000 spindles and 1100 looms running when completed.

—*Texas, Hillsboro. The Hillsboro Cotton Mill, which has purchased the machinery for the plant, expect to begin operations in a few months. Plans are being made for adding a knitting department as soon as possible.

Enlargements and Improvements.

—Alabama, Eufaula. New pickers are being installed in the Eufaula Cotton Mills, which are also having the old ones repaired by the Kitson Machine Company.

—*Alabama, Huntsville. The Dallas Manufacturing Company expects to soon complete the extensive improvements and enlargements begun some months ago.

—*Alabama, Huntsville. A meeting will be held November 6th, by the directors of the Lowe Manufacturing Company, to consider increasing the capital stock from $100,000 to $200,000. It is thought that the increase will be made for the purpose of extending the mill. At the same time, the increase of the capital stock of the Eastern Mfg. Co., from $50,000 to $100,000, will be considered. The weaving and dye plant of the latter concern is now under way. The former mill is for manufacturing cotton yarns, while the latter will make fine ginghams.

—*Connecticut, Bridgeport. Contract has been let by the Connecticut Web Company for the erection of their new buildings, previously reported to be built.

—Connecticut, Willimantic. The Willimantic Cotton Mills Corp. will install 100 additional looms in the mill.

—Illinois, Chicago. Contracts have been let by the Western Shade Cloth Co. for the erection of a building, two stories and basement, 50 by 209 feet, at an estimated cost of about $25,000. They are now completing construction of a $35,000 addition.

—*Kentucky, Henderson. Work is progressing on the construction of the Henderson Cotton Mills' new plant, structure being almost ready for roofing. Sixteen new boilers in addition to present ones will be installed.

—*Maine, Westbrook. The new dye house for the Dana Warp Mills will be 68 by 80 feet, two stories, brick.

—Massachusetts, Adams. W. B. Plunkett & Sons are adding several speeders and carding machines to their mill equipment.

—Massachusetts, Brockton. Contract has been let by the Hub Gore Makers for the erection of a two-story brick addition to their mill. They will install 150 new looms when completed.

—Massachusetts, Easthampton. The Hampton Company will soon start work on the erection of another dye-house, 150 by 50 feet, brick.

—*Massachusetts, Fall River. Work has been started on foundation of a two-story weave shed, 141 by 102 feet, to be erected for the Richard Borden Mills. They will also build an addition to the picker house, 95 by 48 feet.

—Massachusetts, Fall River. The Barnaby Manufacturing Co. is installing some new fancy looms in plant.

—*Massachusetts, Fall River. Work is well under way on the additions for the Richard Borden Mills. The first story of the picker house has been completed and stone work started on the second story; also the weave shed is ready for window frames on the first story. It is expected that the new additions will be completed before the cold weather comes.

—Massachusetts, Fall River. Additional speeders, flat cards and electric stop motion drawing frames are being placed in the Granite Mills No. 2 mill, by the Howard & Bullough American Machine Co.

—Massachusetts, Milford. Four new looms are to be added to Wm. Lapworth & Sons' mill equipment. This concern makes narrow elastic fabrics.

—Massachusetts, New Bedford. An addition, 190 by 840 feet, one story, with saw tooth roof for weave shed, is to be erected for the Dartmouth Mfg. Corporation.

—*Mississippi, Laurel. The additional machinery to be installed in the Laurel Cotton Mills has been received and being put in place. Company is completing erection of sixteen additional cottages and is to build forty more, for the operatives.

—New York, Utica. The Utica Steam Cotton Mills have recently added two new cards and three pairs of mules to the plant.

—*New York, Valatie. Work is being completed on construction of the new dye house for the Valatie Cotton Mill. Building is two stories, brick, 105 by 30 feet. The lower floor will be utilized for opening room and dye house.

—North Carolina, Burlington. It is reported that new machinery will be installed in the Alamance Factory.

—North Carolina, Concord. The Coleman Manufacturing Company contemplates installing an electric lighting plant in the mill. They are now receiving estimates on same. Are also in the market for a 54-inch second hand cotton reel.

—North Carolina, Laurinburg. The Scotland Cotton Mills will install five additional flat cards in the mill.

—North Carolina, Lexington. Work has been started upon the erection of an addition to the Wennonah Cotton Mills, for manufacture of white and colored cottons. An additional story is also to be added to the engine room and a small annex to the lapper room.

—*North Carolina, Nokomis. The Nokomis Cotton Mills advise us that they contemplate putting in 100 looms very soon and run the spinning department double time.

—North Carolina, West Durham. The Erwin Cotton Mills will install additional picking machinery, which has been ordered from the A. T. Atherton Machine Co., Pawtucket, R. I.

—Pennsylvania, Philadelphia. An addition, about 43 by 139 feet, two stories high, is to be built for the Irwell Mills, Richard Thorpe, proprietor. In the new addition will be a dye house and two finishing rooms.

—Rhode Island, Crompton. An addition, 155 by 64 feet, three stories, will be built for finishing room for the Crompton Co.

—*South Carolina, Blacksburg. The Cherokee Falls Manufacturing Co. advise us that they will install no new machinery in the addition reported in previous issue to be erected, but are simply enlarging the mill building at present. Later on may put in machinery.

—Rhode Island, Pawtucket. Work is under way on an addition to the plant of the Phillips Insulated Wire Company. When completed the main building will be 400 by 120 feet, four stories high. The capacity of the plant will be doubled. Boiler and engine room will be separate.

—South Carolina, Cowpens. Application has been made by the Mary Louise Mill, making coarse yarns, for increasing the capital stock from $20,000 to $50,000.

—South Carolina, Gaffney. The Limestone Mill will build an addition to the plant and propose installing 10,000 additional spindles in same, with necessary machinery. When the mill w as first built, it was done with prospect of increasing the original 10,000 spindles to 20,000.

—*South Carolina, Laurens. Arrangements will be made at once for the establishment of the new yarn mill by L. A. McCord, as all the necessary capital has been secured.

—*Tennessee, Sweetwater. The Mascot Knitting Mills give us additional information concerning their new building, which will be two stories, brick, 60 by 100, with engine and boiler house outside, 30 by 20. They now operate 64 knitting machines, and will add 60 more, and are considering a yarn spinning plant to be erected in the spring. They make heavy cotton half hose for men's wear.

—Virginia, Roanoke. The Roanoke Cotton Mills have let contract for installation of an electric lighting plant in the mill.

Mills Starting Up.

—*Alabama, Anniston. The Anniston Yarn Mill has begun operations in the new plant. This concern manufactures hosiery yarns. W. A. Scarborough is president of the company.

—*Connecticut, Baltic. The Baltic Mills Co. has the spindles, 78,000, and over one-half the looms, 1300, in operation on fine cottons, numbers running from 80 to 160. The balance will be started up shortly.

—*Georgia, Columbus. Operations will soon be started up at the Bibb Manufacturing Co.'s branch mill here. This mill is equipped with 20,000 spindles and 600 looms.

—*New Brunswick, St. John. James F. Robertson informs us that he is forming a company with capital stock of $250,000 to pay for the Park Cotton Mills, recently secured, improve the plant and provide working capital.

—*New York, Sherburne. Operations have been resumed in the yarn mill of the Utica Knitting Co.

—*North Carolina, Charlotte. Operations have been started in the new plant of the Chadwick Manufacturing Co., making sheetings.

—*North Carolina, Lumberton. The Lumberton Cotton Mills, of which R. D. Caldwell is president; H. B. Jennings, secretary and treasurer and John W. Kaneer, superintendent, are about ready to start operations. Mill is equipped with 5000 spindles for making hosiery yarns, 20 to 32.

—*North Carolina, Troy. Operations have been started by the Capelsie Cotton Mills, making single warps and two ply skeins. The main building of this plant is 80 by 210 feet, with boiler and engine room, 35 by 40 feet. Mill has 2500 spindles.

—*South Carolina, Graniteville. The new mill of the Graniteville Manufacturing Company, known as the Hickman Mill, has been formally opened. The new building is three stories and basement, which is used for a cloth room. Equipment consists of 15,500 spindles and 560 Draper looms. Sheetings, 3-25, are made.

—*South Carolina, Yorkville. The Tavona Mills will soon resume operations. They have purchased machinery operated by the Sutro Mills and will add two more cards and new twister frames to the plant.

—*Tennessee, Rockford. The Rockford Cotton Mills have resumed operations with E. Koella, manager.

—*Virginia, Petersburg. Operations were resumed Sept. 30th in the Pocahontas Cotton Mills, which have been shut down since August, while general repairs have been made and a new water wheel installed.

Mills Shutting Down.

—New Jersey, Gloucester City. It is reported that the Gloucester City Cotton Mills are to be shut down.

Woolen.

New Mills.

—*Connecticut, Central Village. The Plainfield Woolen Company's new mill is fast nearing completion, the third story of same now being worked upon.

—*Connecticut, Norwalk. Andrews & Smith, who have leased the Norwalk & Fairfield Worsted Mills, formerly known as the Union Mills, will start operations as soon as possible making woolens and worsteds. This mill has an equipment of eight sets cards and 56 looms, with dye house attached. Wm. F. Wood is superintendent of the plant and Mr. Andrews, formerly of Andrews & Reddick, Dalton, Mass., buyer. Goods will be sold direct.

—*Illinois, Lacon. John Grieves & Co. advise us that they expect to start operations the beginning of November.

They will manufacture men's and women's wear, but principally men's. Mill will be equipped with 2 sets of 60" cards and 12 looms, not 18 as previously reported.

—*Kansas, Topeka. The Western Woolen Mill Company expects to start operations in the new mill about November 1st. This plant, of which J. F. McAfee is general manager and superintendent, will have an equipment of 2 sets cards; 10 broad looms, and a dye house. Steam will be the power used. Cassimeres, subsequently made into pants, will be manufactured.

—*Maryland, Baltimore. Operations have been started in a small way in the Maryland Woolen Company's new mill, and it is thought that the entire plant will be running in about a month. The main building is 108 by 128 feet, three stories with basement. The carding and spinning departments will be on the top floor, the weaving on the second, while the finishing and shipping departments will be on the lower floor. Equipment consists of 8 sets cards; 3600 spindles and 40 broad looms. The chief product will be manufacture of heavy, cheap kerseys.

—*Massachusetts, Indian Orchard. The Rhode Island Worsted Company, recently reported to establish a mill at East Greenwich, R. I., for manufacture of woolens, will be located on the second floor of the Indian Orchard Company's old mill, at this place. Work has been started on installing the machinery and operations will be begun as soon as it is possible. Daniel Brown is manager of the company.

—*New York, Albany. It is expected to have the new plant of the Albany Felt Works completed and ready for occupancy about December 1st.

—*Oregon, Portland. Operations will be started up about December in the new plant of the Portland Woolen Mills, making white blankets and fancy woolens. The capital stock of the company to operate the mills has been increased from $50,000 to $100,000. The main building is 200 by 100 feet; and the machinery annex 45 by 75 feet.

—*Pennsylvania, New Bethlehem. James Pontefract & Co. expect to start about Nov. 1st in the new location. They have secured the mill formerly owned by Todd Bros., and which has been idle since 1892. New mill will have 2 sets of cards and 6 looms, with steam for power. Dye house is also attached. Woolen blankets, flannels and yarns, 2 ply, 11 cuts and 3 ply, 15 cuts, will be made.

—Pennsylvania, Philadelphia. The Roosevelt Worsted Mills will make application for charter of incorporation. Thomas Kennedy, William Deacon, Mayer L. Kahn, Norman Bright and Oscar Hoffstadt are interested. They propose manufacturing woolen and worsted yarns, etc.

Enlargements and Improvements.

—Alabama, Anniston. An additional building, about 150 by 52 feet, is to be erected by the Anniston Carpet Co. The capacity of the plant will be greatly enlarged and the output nearly doubled when addition is in running order.

—Connecticut, Norwich. An addition, 40 by 30 feet, brick, to be used as a weave room is under construction for Hall Bros., manufacturers of dress goods.

—Connecticut, Rockville. The Hockanum Company, manufacturers woolen and worsted goods, has let contract for the erection of another new mill, 100 by 45 feet, two stories high, brick. Work will be started at once, as it has been agreed to have the mill completed by December 15th. Part of the new plant will be used for a finishing department.

—Connecticut, Rockville. Contract has been let by the New England Co., making woolen and worsted goods, for the erection of an addition, 70 by 32 feet, one story, to their plant.

—Maine, Dexter. Work is nearly completed on the new office addition for the Wassookeag Woolen Company.

—Maine, North Vassalboro. A new water wheel and 20 by 10 foot flume has recently been put in Herbert Peace's shoddy mill.

—Maine, Sanford. The Goodall Worsted Company has recently installed 50 more looms in the mill.

—*Maine, Waterville. The new addition reported to be built for the Riverview Worsted Mills, 48 by 64 feet, will be two stories and basement and will be erected for purpose of giving more room for finishing and weaving and not for dye house, as previously stated. Further enlargements are contemplated in the spring.

—Massachusetts, Adams. Graham, Clark & Co. have installed considerable new machinery in their mill recently. New carders and a combined measuring, doubling and rolling machine have been added.

—*Massachusetts, Agawam. We have been advised by the Agawam Company that the mill is not being operated nights, but that they are building a third story over their present weave room. The new addition will be used for spinning and dressing and will be equipped with two Johnson & Bassett 312 spindle mules. Another set of cards is also to be added in the card room.

—Massachusetts, Cherry Valley. Extensive additions are to be made to A. W. Darling's mill. A new addition will be built in which he contemplates installing two additional sets of cards, giving the plant a total of six, when done. A new weave shed will probably also be erected.

—*Massachusetts, Holyoke. The new mill for the Farr Alpaca Company has been completed. They will install 150 new looms on the third floor; the second will be used for wool storage, and the first and basement for combing and scouring wool.

—Massachusetts, Lawrence. The Butler Worsted Mill has been purchasd by E. Frank Lewis, and will be operated in connection with his wool scouring and

carbonizing plant. The transfer of the property will not take place for about three weeks, during which time the mill will be operated by the present management.

—*Massachusetts, Maynard. Work has begun here on the erection of a new dye house on site occupied by the old one. The brick walls on the new dye house will be built around the old one, previous to tearing down the standing building. This will cause no stoppage in the working of the department.

—*Massachusetts, Millbury. The Mayo Woolen Company, which has secured the Wheeler Mill property, will start work at once at the plant. New machinery will be installed and improvements made in the buildings, tenements, etc. They contemplate having the mill ready to start operations about January 1st.

—Massachusetts, Millbury. The Bowden Felting Mills propose building an addition, 120 by 60 feet, to the plant. They will also purchase additional machinery to be installed in same.

—Massachusetts, Pittsfield. It is thought that the Peck Mfg. Co. will probably build an addition to the mill early in the spring on account of increased business.

—Missouri, Sedalia. The J. A. Lamy Mfg. Company, manufacturers of cassimeres, is considering project of enlarging their plant in the spring. Company also makes overalls, jumpers, duck coats, etc.

—*New Hampshire, Tilton. Carter & Morrison advise us that they are rebuilding their dye house and making it two stories instead of one, to give additional room in the picker house.

—New Jersey, Camden. The Philadelphia Worsted Company is to increase the capacity of the plant by installing two more spooling machines and one scouring machine.

—New York, Amsterdam. The Consolidated Felt Mills are building an addition, 50 by 45 feet, in which they will install two new Hardner machines.

—North Carolina, Elkin. The Chatham Woolen Mills, which manufacture woolen blankets, have completed an addition which has been equipped for purpose of making cotton blankets.

—Pennsylvania, Clifton Heights. Four additional sets of worsted cards (Furbush) have been installed in the Runnymede Worsted Mills. Other machinery has also been added, doubling the production.

—*Pennsylvania, Conshohocken. James Hall, proprietor of the Aramink Carpet Works, which were destroyed by fire, is rebuilding the plant and making improvements and alterations to same. The main building has been remodelled as a one-story weave shed, in which all the looms will be installed.

—Pennsylvania, Philadelphia. An addition of another story, 187 feet long, is to be made to Stinson Bros. carpet mill weave shed, at Fairhill and Huntingdon Streets.

—Pennsylvania, Philadelphia. An addition is to be built to the Shackamaxon Worsted Company's mill, Allegheny Avenue and Hancock Street.

—Pennsylvania, Philadelphia. Smith & Lyons, Manayunk, manufacturers of carpet yarns, have purchased additional machinery for doubling the capacity of their plant, and will have new machinery in operation soon.

—Pennsylvania, Philadelphia. Wolstenholme & Clarke, manufacturers French spun worsted yarn, have ordered additional machinery, which is being shipped and will be put in operation as soon as set up.

—Pennsylvania, Philadelphia. A large building, about 50 by 120 feet, four stories, at corner Third and Huntingdon Streets, has been secured by Thos. Caves & Sons, manufacturers of ingrain carpets, and will be annexed to their present plant. They propose manufacturing different kinds of rugs, including a new wire effect carpet size rug, exclusively in the new building.

—Pennsylvania, Reading. An addition, 100 by 18 feet, brick, has recently been completed for Louis Kraemer & Co.

—Pennsylvania, Williamsport. H. E. and J. C. Holtsizer, manufacturing cassimeres and cloakings, contemplate building an addition to their plant shortly.

—*Rhode Island, Oakland. Eighteen of the eighty new looms to be installed in the Coronet Worsted Company's new plant, have already been placed. Four new mules have also been added.

—Rhode Island, Oakland. The Oakland Worsted Company is having a new dye house built, to replace the old one, on account of business increase.

—Rhode Island, Wakefield. The Decarlier Worsted Company contemplates increasing the plant.

—*Wisconsin, Onalaska. The Onalaska Mfg. Co. has been re-organized with a capital stock of $8000; S. Heineck, president; T. G. Aiken, vice-president and A. N. Moore, treasurer. Ground has been broken for an addition to the plant, in which they will install about 10 additional looms for making woolen goods. New machinery is expected to be running in about two months.

—*Wisconsin, Prairie du Chien. The Prairie du Chien Woolen Mill Co. is considering the project of building an addition and adding looms and a complete wool scouring house and dye house equipment and not two sets of machinery as was previously reported.

Mills Starting Up.

—Massachusetts, Hinsdale. Operations have been resumed in the Broad Mill of the Hinsdale Woolen Company, after a shut down of about a year. The carding and spinning departments were first started, but now all the departments are running.

—*Massachusetts, Uxbridge. It is expected that operations start this week in the Charles C. Capron mill, recently

purchased by C. W. and John R. Scott. The Piedmont Mill, operated by John R. Scott, at Worcester, will be discontinued as soon as the lease expires.

—*Pennsylvania, Philadelphia. — The Schuylkill Valley Worsted Co., whose incorporation we reported recently, has started up the Phenix Mills at Manayunk, which will be operated under the above name. William Browne is the manager. It is understood that a compromise has been reached in the affairs of William Browne & Sons, which permitted the starting of the mills, and it is surmised that the principal creditors of the firm are interested in the new company and will be represented in the management.

Mills Shutting Down.

—Massachusetts, Newburyport. The Bayley Hat Factory is to be shut down and the machinery removed to Amesbury, to the Merrimac Hat Co. The buildings vacated will be offered for sale.

—New York, Cossayuna. The Alexander Blanket Company's mill has been shut down for several weeks, in order to make repairs.

Knit.

New Mills.

—*Alabama, Athens. Operations will be started about October 10th in the Limestone Hosiery Mill, making children's and misses' hosiery. They expect to have the full output made by the first of November.

—*Florida, Jacksonville. The Jacksonville Knitting Mills are again ready for business, having replaced the plant destroyed by fire several months ago. They propose erecting a building of their own shortly, and will soon let the contract for one, 60 by 110 feet, five stories, which they contemplate having ready the early part of next year.

—*Georgia, La Fayette. The Elizabeth Hosiery Mills started operations October 1st, making ladies' seamless fast black hosiery. This concern is capitalized at $26,000, which is to be increased at once to $35,000 for additional machines. A. R. Steele is president; W. H. Steele, treasurer, and H. C. Alexander, superintendent of the mill. The mill now has 40 knitting machines and is operated by steam power. Dye house is attached.

—New York, New Hartford. The Olympian Knit Goods Co. will build a new mill here, 40 by 115 feet, 3 stories, brick, where they will remove their plant at Utica, N. Y., when completed. It is thought that the plant will be ready about May, 1902. Will be equipped with all modern machinery.

—*North Carolina, Kernersville. The Victor Hosiery Mills, W. H. Leak & Co., proprietors, will start operations November 1st. Men's heavy half hose will be made. Plant is equipped with 12 knitting machines and operated by steam. Goods are sold direct.

—North Carolina, Kernersville. Operations are expected to start in about two weeks in W. H. Leak's knitting mills.

—*North Carolina, Winston-Salem. The Radnor Hosiery Mill of Wayne, Pa., has been bought out by J. W. Hanes of this place, who started up a new plant here, Sept. 23d, known as the Shamrock Mills. Men's, women's and children's fine gauge cotton hosiery is made. J. Frazier Bard is superintendent of the plant, which is equipped with 50 knitting machines, and operated by steam. Dye house is attached. Goods are sold direct.

—Pennsylvania, Philadelphia. A new company has recently been incorporated as the Iroquois Knitting Mills. They have leased space at corner of Ashmead and Wakefield Sts., Manayunk, and will manufacture men's fine grade ribbed underwear. Harlow D. Gaines is president and Samuel Corkran, secretary and treasurer of the company. Plant has 12 knitting machines; 25 sewing machines and is operated by steam. Goods are sold direct.

—Pennsylvania, Reading. The Maidencreek Hosiery Company has been incorporated with capital stock of $5000, by Franklin Seiders, Solomon R. Rothermel, Geo. D. Stitzel, M. R. Mengel and Chas. H. Dunkle.

—*Utah, Salt Lake City. The Ogden Knitting Factory has started operations in its new plant on Washington Avenue. This concern, of which Joel Ricks is superintendent, makes union suits, men's, women's and children's, and all kinds of hosiery, operating 8 knitting machines.

—*Virginia, Portsmouth. The Piedmont Manufacturing Company has been incorporated with capital stock of $25,000, with L. B. Whatley (Portsmouth), president; S. J. Masters, vice-president; D. S. Fletcher, secretary, and N. A. Smith, treasurer. This company will carry out the plan started by L. B. Whatley for operating a mill for manufacturing cotton yarns, hosiery, underwear and cotton cloth.

—Wisconsin, Kenosha. The Cooper Underwear Company is a new concern in operation here since July 1st, making men's fine underwear. Henry S. Cooper is superintendent and buyer of the concern. Mill has an equipment of 12 knitting machines, with dye house attached and is operated by steam.

—*Wisconsin, Two Rivers. The Two Rivers Knitting Mill expects to have the new plant ready by first of next year. C. W. Schmidt is president and superintendent, and W. S. Bremer, treasurer of the company, which makes sweaters, skirts, cardigan jackets, tights, hosiery, etc. Goods are sold direct.

Enlargements and Improvements.

—*Canada, Almonte. Work has been started on roofing the brick addition to the Almonte Knitting Co.'s mill.

—Illinois, Chicago. A new building, 36 by 130 feet, four stories and basement, is being erected for the Strauss-Kahn Knitting Co. This concern, which manufactures underwear, contemplates having the new building ready about January 1st, 1902.

—New York, Amsterdam. Eight new tables of knitting machines are to be installed in the W. H. Rowe knitting mill.

—New York, Utica. The Capron Knitting Company has let contract for the erection of a new building, to be 42 by 100 feet, four stories, brick, on Whitesboro Street.

—New York, Rochester. The Ideal Knitting Mill, F. F. Robinson, proprietor, has completed the erection of an addition, 20 by 40 feet. Two new knitting machines have been installed.

—*North Carolina, Durham. The Durham Hosiery Mills will remove into the new building November 1st. They will have 100 additional machines and a daily output of about 1200 dozen seamless hose and half-hose.

—*North Carolina, Newbern. The Southern Hosiery Mills, recently reported incorporated, will continue operating the plant of the Clermont Knitting Mills. About $40,000 will be expended for improvements, details of which are being arranged.

—North Carolina, Newton. Work is being completed on a second addition for the Newton Hosiery Mills. Additional machinery will be installed.

—Pennsylvania, Mohrsville. The Crown Knitting Mills, J. H. Wagner & Co., proprietors, which have recently put up some small machines, are to add three more body frames. They also contemplate building an addition. Ladies' extra and regular size underwear is made.

—*Pennsylvania, Phoenixville. The S. Thomas Knitting Mills are installing new boiler and engines and adding knitting and finishing machines to their plant, so that the production will be 350 dozen daily. Make men's, ladies' and children's underwear.

—Pennsylvania, Reading. The Hawk Hosiery Company has removed from Walnut and Thorn Streets to 2d and Buttonwood Streets, where they have larger space for manufacturing purposes. They will add one hundred new machines.

—*Pennsylvania, Sunbury. Slear Bros., who are erecting a new mill, expect to be located in new quarters, 1251-1253 Susquehanna Ave., about Nov. 10th. They manufacture the Slears Brotherhood hosiery in Egyptian thread for men, women and children, and sell goods direct. Now have 15 knitting machines, 4 ribbers and 2 loopers in operation, but new mill will accommodate four times their present capacity.

—Tennessee, Lenoir City. An addition has recently been completed for the Dixie Knitting Mills, in which they will install about 25 or 30 new machines.

—*Tennessee, Lenoir City. The Dixie Mills will have 250 knitting machines when the addition recently reported is completed.

—Wisconsin, Appleton. The capital stock of the Fox River Valley Knitting Company has recently been increased from $8000 to $50,000. A large addition is being constructed to the plant, which will greatly increase the output.

—*Virginia, Farmville. The Farmville Hosiery Company, of which J. G. Burton is lessee and manager, is now in operation, making men's, women's and children's hosiery. Mill now has 30 knitting machines.

Mills Starting Up.

—*Michigan, Owosso, Isaac H. Keeler is president; Herman C. Frieseke, vice-president and Charles E. Burnett, secretary and treasurer of the Burnett Knitting Co., which has recently started operations in its new plant.

—New York, Philmont. The Aken Knitting Company has resumed operations after a shut down of about six weeks, during which time new boilers were installed.

Silk.

New Mills.

—New Jersey, Homestead. Givernaud Bros. have started work on the erection of a new mill near the one now in operation. The latest improved machinery will be installed.

—*New York, Depew. The Depew Improvement Company has donated land for new buildings to be erected for the silk mill to be established here, with capital stock of $500,000, of which $325,000 will be common stock and $175,000 preferred, bearing 7 per cent. interest. A large concern, now operating a plant, is backing the enterprise, and has taken $60,000 worth of the preferred stock, while $40,000 worth has been taken by New York capitalists. They will manufacture all kinds of silks.

—*Pennsylvania, Bangor. Bids have been asked for the erection of a two-story building, 40 by 100 feet, for the new silk mill to be established at this place.

Enlargements and Improvements.

—Illinois, Chicago. A one-story brick addition will be built to the Chicago Embroidery Company's plant, 492 West Ohio Street.

—Maine, Westbrook. The Haskell Silk Co. has started work on erection of an additional dye house.

—Pennsylvania, Allentown. The capacity of the Adelaide Mills, of the Phoenix Manufacturing Company, is to be increased; about $15,000 worth of new machinery is to be installed.

—*Pennsylvania, Allentown. The Phoenix Silk Manufacturing Co. will install 100 new looms in the Adelaide Mills.

—Pennsylvania, Bethlehem. The Bethlehem Silk Company is adding more machinery to the equipment.

—Pennsylvania, Butler. The Butler Silk Mill contemplates doubling the capacity of the plant. It is thought that the concern, which now occupies only a part of the building in which they are located, will soon make arrangements for the whole of it.

—Pennsylvania, Coatesville. New machinery is being installed in Ashley & Bailey Co.'s mill.

—Pennsylvania, Lock Haven. The Lock Haven Silk Co. are considering project of doubling the capacity of the plant and expect to start work on same early next spring.

Mills Shutting Down.

—New Jersey, Paterson. The Eagle Silk Company's mill has been shut down. A voluntary petition in bankruptcy has been filed by the company. Liabilities are estimated at $7000, with assets of $2000.

—Virginia, Norfolk. The Norfolk Silk Company, manufacturers of broad silks, is to install 125 more looms (which are on their way) in the plant. They are considering the project of enlarging the building.

Miscellaneous.

New Mills.

—*Massachusetts, North Dighton. It is thought that operations will be started in about month in the Mount Hope Dyeing & Bleaching Co.'s plant. The construction work has been completed and installation of machinery has begun.

—*Pennsylvania, Philadelphia. The new bleaching plant established recently at Paoli Ave. and Umbria Street, is known as the Silver Spring Bleaching Co. They expect to be in operation November 1st, bleaching Turkish towels, and underwear skein yarn and warps.

—*Pennsylvania, Philadelphia. A new dye house, 30 by 100 feet, with stock and dry room, 61 by 68 feet, two stories, scouring room, 40 by 36 feet, engine and boiler house, 30 by 30 feet and office room 15 by 15 feet, has recently been completed for John W. Carson, proprietor of the Red Star Dye Works, formerly at 2d Street and Rising Sun Lane,, dyeing all kinds of yarn. New Plant is located on Glenwood Avenue.

Enlargements and Improvements.

—Massachusetts, Attleboro. A new building, 200 by 45 feet, three stories, with a wing, 30 by 60 feet, two stories, is to be erected by James Orr, of the Orr Bleaching & Dyeing Works. Two stories of the new plant are to be leased to Chas. F. Orr, operating a plant for making tubular shoe laces and glazed yarns at Mansfield. A separate building, 100 by 35 feet, one story, brick, will be erected for the dyeing department, and an engin room, 40 by 60 feet.

—Massachusetts, Indian Orchard. The Indian Orchard Company has let contract for the erection of a new dye house, 100 by 40 feet, brick. The latest improved machinery will be installed.

—New Jersey, Paterson. The Auger & Simon Silk Dyeing Company will build an addition to their dye house, on Branch Street.

—New York, Auburn. The Columbian Cordage Co.'s plant was closed for three days to allow making of necessary repairs and installation of new machinery. Another story, 17 by 64 feet, is to be added, for the preparation room.

—Pennsylvania, Reading. A one-story brick dye house is to be built on Muhlenberg Street, by Knoll & Althouse.

Mills Starting Up.

—*Rhode Island, Apponaug. Work has been started on making repairs, etc. to the Apponaug Print Works, now known as the Oriental Print Works, recently purchased by William W. Dunnell. New boilers and engine and new machinery are reported to be installed and the plant otherwise enlarged previous to putting same in operation.

Fires.

—Alabama, Tuscaloosa. The dye house of the J. Snow Hardware Co.'s mill, of which J. W. Sanders is treasurer and buyer, has been destroyed by fire. The loss is estimated at about $5000, with no insurance.

—North Carolina, Randleman. The Randleman Hosiery Mills have been completely destroyed by fire. The loss, estimated at $25,000, is partly covered by insurance. Plant will probably be immediately rebuilt.

—Pennsylvania, Pottstown. The Park Hosiery Company's mill, which was soon to have been removed to Reading, has been destroyed by fire. The loss, estimated at about $20,000, is partially covered by insurance.

—Rhode Island, Providence. Fire destroyed the picker room of the Valley Worsted Mills of the American Woolen Co., recently. The loss is estimated at several thousand dollars.

Failures and Suspensions.

—New Jersey, Paterson. Jacob Freisch, manufacturer dress silks, silk linings and grenadines, has made an assignment to David Grimshaw of Grimshaw Bros. The assets are estimated at $85,222, with liabilities of $59,977.

—New York, Camillus. Walter F. Keifer of this place has filed a petition in bankruptcy, with liabilities estimated at $13,898.95; no assets.

—Pennsylvania, Philadelphia. The Lincoln Worsted Mills have made an assignment to James F. Boylan, for the benefit of the creditors.

Facts and Gossip.

—Alabama, Pearce's Mills. It is reported that Jim Pearce is interested in organizing a company with a capital stock of $50,000 to build a knitting mill here. He has a fine water power, and would subscribe for one-half the stock.

—*Arkansas, Fort Smith. We have been advised by S. A. Williams, secretary of the Commercial League, that an effort is being made to start a carpet factory here, but that it has not developed far enough for details.

—Connecticut, Hazardville. Gordon

Bros. have incorporated as Gordon Bros. Co., with capital stock of $75,000.

—*Connecticut, Killingly. Francis H. Manning of Luce & Manning, Boston, has purchased the Truesdell, Bartlett and Peep Toad Mills, at East Killingly, previously reported purchased by Providence capitalists, with Louis Bartlett, in charge. George S. Brown, of the Crystal Water Company, is to be permanent agent of the mills.

—Delaware, Dover. It is reported that negotiations are being carried on with the business men of this place and a large hosiery and knit goods concern with view to having them locate here.

—*Georgia, Tennille. The bankruptcy proceedings against the Tennille Cotton Mills have been ended. An agreement has been made by the creditors and bondholders to issue $65,000 in bonds and $7000 in preferred stock, creditors to accept bonds in lieu of cash. Operations will be resumed at once in the mill.

—*Illinois, Kankakee. The project of locating a knitting mill is again being agitated.

—Indiana, Elwood. A meeting will be held shortly by the citizens of this place to consider proposition for a building, made by a large woolen concern, regarding establishment of their mill here.

—Kansas, Independence. It is reported that the cotton mill at this place will soon be put in operation. W. F. Dennis of Sherman, Texas, has been corresponding for some time relative to leasing the property and it is thought that he will accept the proposition made by the stockholders of the mill.

—Maine, Biddeford. P. Y. De Normandie has been elected to succeed George Dexter (resigned) as treasurer of the Pepperell Mfg. Co.

—Maine, Springvale. The creditors of the Springvale Woolen Company, which started operations about two years ago, making dress goods, have been offered ten cents on the dollar by George W. Hanson, the assignee. It is reported that they will resume if satisfactory settlement is made.

—Massachusetts, Adams. W. C. Plunkett & Sons' old mill, formerly used for spinning, at Arnoldville, and which has been idle for some time, has been leased by the North Adams Spool & Bobbin Company, in which Warren Wilkinson, of this city, is interested.

—Massachusetts, Adams. Some of the departments in Adams Bros. Mfg. Co.'s mill are being operated overtime, to keep up with orders.

—Massachusetts, Boston. The National Flax Fibre Co. has called a meeting of its creditors to consider a plan to meet the present contingencies and provide working capital to at once start the mill at Millis in operation and keep it running.

—Massachusetts, Boston. The Echo Knitting Mills, manufacturers of infants' cashmere hosiery, formerly at 22 Randolph Street, are now located at 537 Albany Street.

—Massachusetts, Fall River. The American Braiding Company, with offices in New York, has been formed by the Lambeth Rope Company (New Bedford), the Heywood Narrow Fabric Company and Small Bros. (Fall River) to sell their products of flat cotton braid.

—Massachusetts, Great Barrington. Hugh Sheridan has purchased the mill in Ashuelot, N. H., from the James S. Gill estate and will remove there the first of December, when mill here will be shut down.

—Massachusetts, Lawrence. The firm of Brown & Ackroyd has been changed to Brown & Whittier, Mr. Ackroyd having withdrawn by mutual consent and Mr. Claude M. Whittier, superintendent of the plant, having been admitted.

—Massachusetts, New Bedford. It is reported that a movement is on foot for the establishment of another fine goods mill in this city. Fall River capitalists have agreed to furnish $350,000, if local parties would subscribe $150,000 and a suitable site secured. Antone L. Silva has the matter under investigation.

—Massachusetts, Palmer. W. T. Carroll is reported as starting a small hosiery mill at Tenneyville.

—*Massachusetts, Pittsfield. Some of the machinery in the Bel Air Mill, formerly operated by Wilson & Horton, is being shipped away, while some is sold for old junk.

—Massachusetts, Quinapoxet. Mr. Johnson, of Chaffins, has purchased the Welch & Gleason Manufacturing Company's mill. Two new pickers will be added. A new gauze room has also been built.

—*Massachusetts, Reading. J. W. Richardson, who has been interested in starting a knitting mill here, has abandoned the project for this winter.

—Massachusetts, Taunton. A small building has been leased by Fred J. Henry on Winthrop Street to be operated as a rug factory.

—*New York, Dryden. W. M. Spiegel has sold his interest in the Dryden Woolen Mill, to D. R. Davenport, of Elmira.

—Massachusetts, Waltham. Plans are underway for the re-organization of the Boston Manufacturing Company. It is proposed to divide the property, selling the bleachery to a new corporation to be formed and the mill to another new company, the stock to be taken by the Boston Mfg. Co., in payment for the two plants; the additional stock raised for money needed, etc., to be offered to the present stockholders against cash subscriptions. About $225,000 is an estimate of amount required to renew the main water plant, picking machinery and increase the speed of the present spindles and add 5000 more. A meeting will be held by the directors and stockholders on the 28th to consider same.

—Massachusetts, Westfield. The Cressy Thread Company, manufacturers of spool cotton, is moving its plant from this place to Appleton Street, Holyoke, Mass.,

where concern is to be addressed after Nov. 1st.

—Mississippi, Biloxi. The Biloxi Commercial Club is agitating the project of establishing a woolen mill here and a committee has been appointed to make inquiries in the interest of same.

—*Mississippi, Hattiesburg. A meeting has been called by W. H. Hardy, president of the Cotton Factory Company, to take some steps regarding the cotton mill project, mentioned some time ago.

—*Montana, Billings. The citizens of this place, represented by Dr. W. A. Alien, are desirous of securing a woolen mill and will give $2000 as a bonus for inducement to have one established here.

—*New Brunswick, St. John. The Park Cotton Mills, which have been closed for several months, have been purchased by James F. Robertson, for $145,000.

—*New Jersey, Camden. George W. Jessup, secretary of the Board of Trade, informs us that there is only a rumor of a gingham or silk mill locating there. A party has made inquiries regarding concessions to be made provided they should decide locating there, but nothing further has been heard from the inquirers.

—New Jersey, Paterson. Miller & Ward have leased space in the Eastwood Mill, on Straight Street, and have moved their plant on Paterson Street to new location.

—New Jersey, Paterson. The plant of the Paterson Wool Extract Co., which succeeded to the business of James E. Daly, has been closed and will be sold at auction. This is on account of illness of Mr. Van Haste, vice-president and general manager of the concern, who is the only member of the concern knowing the business, the others having other business interests.

—New Jersey, Trenton. A new woolen mill is to be established here by Geo. Agnew & Sons. Nothing has yet been definitely given out.

—*New York, Fort Ann. E. Wall, Jr., advises us that, owing to rush of work, the removal of his mill will probably not be made before spring.

—New York, Herkimer. Max Miller has sold his interest in the Gem Knitting mill to C. R. Snell and H. G. Munger. It is probable that the company will be reorganized.

—New York, New York. At meeting recently held by the stockholders of the United States Cotton Duck Corporation, Trenor L. Park of J. H. Lane & Co. was elected to succeed Richard Cromwell as president of the concern.

—New York, New York. The Howard Embroidery Company has been incorporated with a capital stock of $3000 by Alexander Shapero, Joseph Streckstein and Isaac Joondeph, of New York City.

—New York, Phoenix Mills. The knitting machines in the Hope Mill of the Index Knitting Mills' plant, are to be removed to the Index Mill, where knitting will be done for both plants.

—*New York, New Hartford. A project is under foot by number of men who have formed an organization, toward which $30,000 has been subscribed, to revive the Armstrong & Baker Knitting Mill.

—*New York, Syracuse. It is reported that the project of securing the Liberty Silk Company's branch mill at this place has been unsuccessful. A proposition is now on foot for consolidating the Syracuse Silk Co. and the Liberty Silk Co., whereby the product of the Syracuse Silk Co. would be consumed by the Liberty Silk Mill.

—New York, Syracuse. An application has been made to the Chamber of Commerce for information, etc., regarding location in establishing a weaving mill here.

—North Carolina, Jonesboro. David Clark of Charlotte, N. C., was elected president and W. A. Graham Clark, general manager and treasurer of the Jonesboro Cotton Mills, at meeting recently held by the directors. This mill manufactures cotton yarns, operating 3200 spindles.

—*North Carolina, Rockingham. The Great Falls Cotton Mills, W. N. Everett, receiver, will be sold on Monday, November 4.

—North Carolina, Waco. J. C. Hoyle of Cherryville, is interested in project of establishing a new knitting mill at this place.

—North Carolina, Wadesboro. The Bluitt Falls Electrical Power Company has been incorporated with capital stock of $250,000 by Robert L. Steele (Rockingham), S. T. Stowe (Lodo), and Fred J. Coxe (Wadesboro). Company proposes developing water power near Bluitt Falls and to later build mills, etc.

—*North Carolina, Winston. Geo. W. Connor, secretary of the Business Men's Assn., writes us that there has been some general talk of establishing a cotton mill, but nothing definite has assumed shape.

—Ohio, Cincinnati. It is reported that a company is being organized for purpose of purchasing and operating the Covington Woolen Mills Cmpany's plant at Covington, Ky.

—Ohio, Columbus. B. O. Ashdown (formerly at Piqua, Ohio), is now interested in the Columbus Woolen Mills, as superintendent. It is thought that the company will be re-organized and some improvements made to the mill.

—*Ohio, Defiance. The creditors of the Defiance and Nightingale Woolen Mills have decided to re-open the mills for purpose of working up the raw material on hand, of which the estimated value is $20,000. It is stated that efforts will be made to keep the mills open permanently.

—Ontario, Forest. Andrew McGregor, James Atty (Guelph) and N. C. McPhail (Toronto), have incorporated the Standard Carpet Co., with capital stock of $40,000, to manufacture carpets.

—Pennsylvania, Berwick. It is reported that F. Q. Hartman, operating the Dan-

ville Silk Mills, proposes erecting a large plant here.

—Pennsylvania, Chester. W. C. Kelly is reported to be interested in a movement to induce yarn and knitting mill manufacturers to locate in that place and that a large company has the matter under consideration.

—Pennsylvania, Chester. It is reported that F. A. Strause, of F. A. Strause & Co., worsted yarn manufacturers, has purchased the Rothschild Shirt Factory building at Trenton, N. J., and proposes removing the plant there.

—Pennsylvania, Hazleton. The Hazle Knitting Mills have now been incorporated with capital stock of $30,000.

—Pennsylvania, Lebanon. Dr. A. B. Gloninger is making efforts to secure the location of silk mill here. A company at Paterson, N. J., is considering the inducements offered by the town.

—Pennsylvania, Lock Haven. A knitting mill, making hosiery, is reported to be interested in securing another location and local capitalists are making efforts to get the plant at this place.

—Pennsylvania, Parkersburg. It is reported that George Glantz of Glen Rock will build a small hosiery mill here.

—Pennsylvania, Philadelphia. The A. L. Robertshaw Manufacturing Company has been incorporated with capital stock of $40,000 for purpose of operating A. L. Robertshaw's mill at Wayne Junction, which is fully eqeuipped for manufacturing men's wear or ladies' dress goods.

—Pennsylvania, Philadelphia. Walter Hoffman, formerly of Hoffman & Cross, dissolved, has become a member of the firm of Edward T. Steel & Co., with mills at Bristol, Pa. Mr. Hoffman will have charge of the New York selling house, which has been managed by Mr. Warner J. Steel, who will take an active part in the operation of the mills.

—Pennsylvania, Philadelphia. Geo. Brooks & Sons, operating the Oriental Mills, 55th Street and Wyalusing Ave., on upholstery goods, have been incorporated as George Brooks & Sons Company, with capital stock of $300,000.

—*Pennsylvania, Pottsville. Chas. T. Bowen, J. W. Fleet, F. S. Haesler, B. J. Smith and Francis Stubbs represent the syndicate interested in purchase of the Schuylkill Plush and Silk Mill. The offer made by the company is being considered by a committee, of which W. L. Sheafer is chairman, appointed for the purpose. It is thought that the project will be successfully carried through and plant put in operation in about three weeks.

—Pennsylvania, Shenandoah. It is reported that efforts are being made by Paterson (N. J.) parties to interest local capitalists in the establishment of a silk mill here.

—Pennsylvania, Sinking Spring. It is reported that an underwear factory will be started here.

—*Pennsylvania, Trainer. The D. Trainer Mfg. Co.'s mill is still idle. It was thought that the mill would resume operations the first of September, but complications among the creditors have caused a delay.

—Rhode Island, Nasonville. William Gilbert, treasurer of the Nasonville Woolen Co., has sold his interest in the plant to Eli Gilboa, the president, who assumes control of the whole property.

—*Rhode Island, Pawtucket. Austin Steere has been incorrectly reported as interested in formation of a company to experiment with a new loom. This should be Merrel O. Steere, with Thomas Brindle, as the Brindle-Steere Company, 107 Stewart Street, Providence.

—Rhode Island, Providence. The Ballou Yarn Co., operating a mill at this place, has been incorporated with a capital stock of $50,000, by Geo. B. Morrison, Edward R. Ballou and John H. Morrison.

—Rhode Island, Woonsocket. Edward A. Stevens has been elected treasurer of the Glenark Knitting Company, succeeding A. J. Follett, who will continue as secretary. The company's selling agents, C. B. Fillebrown & Co., have moved their main offices from Boston to the mill in Woonsocket.

—Rhode Island, Woonsocket. Negotiations are pending for the sale and purchase of the Lippitt Woolen Company's mill. It is reported that the American Woolen Company is interested.

—*South Carolina, Fairmont. The Fairmont Cotton Mill will be sold the first Monday in December. The upset price of the plant has been set at $75,000. Plant is in the hands of receiver, L. Guy Harris.

—*Texas, Dallas. A committee, of which E. J. Kiest is chairman, with A. P. Tenison and Philip Sanger, associates, has been appointed by Charles Steinman, president of the Dallas Commercial Club, to raise not less than $25,000 stock for establishing a knitting mill here.

—Texas, Houston. A. F. Parker, 911 Franklin Avenue, is interested in organizing a company for manufacturing camel's hair press cloth. He was formerly connected with a mill in Houston Heights.

—Texas, Milford. A. J. Bryan is interested in organization of a company to build and operate a mill for manufacture of yarns and cotton thread.

—Tennessee, Memphis. The Memphis Cotton Mill is again on the market for sale, the lease of J. A. Pinchback and J. A. Smith having expired and the above mentioned parties not renewing same.

—*Texas, Denison. It is reported that the Denison Cotton Mill, now closed, will be re-organized by Eastern capitalists.

—Texas, Stephenville. James Collins, mayor, is interested in project of organization of The Stephenville Cotton Mill Company, with capital stock of $100 000, to build and operate a cotton mill. It is proposed to divide the capital stock into $10.00 shares.

—Wisconsin, Madison. The Racine Knitting Company has now been incorporated with a capital stock of $250,000.

PERSONAL RECORD.

Cotton.

—F. G. Ashbell, formerly overseer of weaving at the Pepperton Cotton Mills, Jackson, Ga., has formed an engagement with the Covington Cotton Mills, Covington, Ga.

—John W. Anderson, overseed of weaving at the Langley, S. C., Mfg. Co., has resigned that position and accepted a similar one with the Granby Cotton Mills, Columbia, S. C.

—Nelson Clouette, for several years employed by the Amoskeag Manufacturing Co., of Manchester, N. H., as a carder, and who had charge of starting up of the carding in all its branches in their new No. 4 mill, has accepted the position of overseer of carding in the New Hampshire Spinning Mill at Penacook, N. H.

—J. T. Abercrombie has resigned his position as carder and spinner at the Tucapau Mills Co., Tucapau, S. C., to succeed his brother at the Poe Mfg. Co., Greenville, S. C.

—W. T. Brown, superintendent of the Canton Cotton Mills, Canton, Ga., owing to ill health, has been obliged to resign.

—Larkin H. Brown has severed his connection with the Saunders Cotton Mill, Saundersville, Mass., and is now with the China Manufacturing Co., Suncook, N. H., as overseer of weaving. His brother, Hugh L. Brown, has been promoted to fill the position made vacant by his resignation.

—Mr. Banks, formerly with the Merrimack Manufacturing Co., Lowell, Mass., has accepted the position of overseer of the carding department of the Palmer Mill of the Otis Co., Three Rivers, Mass.

—W. D. Cooksey is the new overseer of spinning at the Durham Cotton Mills at East Durham, N. C.

—W. A. G. Clark of Griffin, Ga., has been elected manager and treasurer of the Jonesboro (N. C.) Cotton Mills, succeeding E. L. Acree, who a short time ago committed suicide.

—S. S. Campbell of Charlotte, N. C., is the new boss carder at the Tuscaloosa Mill, Tuscaloosa, Ala.

—James Kershaw, who recently resigned his position as superintendent with the Hockmeyer Bros., Waterhead Mills, Lowell, Mass., dyers and finishers of corduroys, has been appointed manager of the Hart Textile Co., Woonsocket, R. I., printers, dyers and finishers of corduroys, velveteens and plushes. Mr. John J. Hart, the president of this company, will give more of his attention to the New York end of the business. The Hart Textile Co. are extremely busy, and are running nights.

—P. Y. DeNormandie has been appointed treasurer of the Pepperell and Laconia Mills, Biddeford, Me., succeeding George Dexter, resigned.

—William H. Erskine, for many years in charge of the carding department of the plant of the United States Cotton Co., Central Falls, R. I., has resigned.

—W. A. Erwin has resigned as general manager of the Erwin Cotton Mills Company, West Durham, N. C., and will be connected with the New York selling agency of the company.

—George H. Fairbanks has removed from Birmingham, Ala., to Columbus, Ga., where he has a position with the Columbus Power Co.

—J. B. Holland has resigned his position at the Pacolet Mills, Pacolet, S. C., to become overseer of the cloth room at the Laurel Cotton Mills, Laurel, Miss.

—J. A. Hamby has been made superintendent of the extensive dyeing department of the several Odell Mills at Concord, N. C. Mr. Hamby was formerly of Tennessee, but more recently identified with the Altamahaw and other North Carolina mills.

—Harry Hebden, of Waltham, Mass., is taking the designing course at the Lowell Textile School.

—Buckley Holden has resigned his position as expert examiner for the Lorraine Manufacturing Co., Saylesville, R. I.

—Robert Jackson, formerly boss carder at Kingston, Ont., is now in charge of the combing room at the New York Mills, New York Mills, N. Y.

—C. F. James, formerly boss carder and spinner at the Springstein Cotton Mills, at Chester, S. C., is now boss spinner at the Iceman Mills, McColl, S. C.

—Patrick Kelley has resigned as overseer of the carding department of the Wampanoag Mills, Fall River, Mass., after a service of nearly ten years.

—James E. Kidd is overseer of spinning at New York Mill No. 1, New York Mills, N. Y.

—C. H. Lee, overseer of mule and ring spinning at the Blackstone Manufacturing Company's mill, Blackstone, Mass., has accepted the position of superintendent of Robert Knight's cotton mill at Readville, Mass. Michael J. Crowley, who has been secondhand in the ring spinning room at the Blackstone Co.'s mill, has been appointed overseer of that room, and John Dennis, who has been secondhand in the mule room, has been appointed overseer of that department.

—Mr. Lee, formerly of the Lawton Spinning Co., Woonsocket, R. I., is now carder and comber at the Boston Manufacturing Co., Waltham, Mass.

—J. T. Morris has resigned as loom fixer at the Spartan Mill, Spartanburg, S. C., to become overseer of weaving for the Odell Company at Concord, N. C.

—F. L. Morton, formerly superintendent of the Adelaide Mills, Anniston, Ala., is now at Talladega, Ala.

—C. A. Mann of Albemarle, N. C., has accepted the position of boss spinner at the Pocahontas Mill, Petersburg, Va.

—Thomas Mooney of Utica, N. Y., has been appointed superintendent of the Wampanoag Mills, Fall River, Mass.

—A. J. Milstead, general manager of the cotton mills at Tallassee, Ala., has resigned, and his two sons, superintend-

ents of the two mills respectively, have also resigned.

—Henry Osgood, superintendent of the W. A. Slater Mills, Jewett City, Conn., has resigned his position. Mr. Ballou succeeds him.

—W. W. Polk, formerly of Augusta, Ga., has been engaged as machinist at the Cedartown Manufacturing Co.'s mill No. 1, Cedartown, Ga.

—James W. Pilkington, boss dyer and bleacher, formerly of Schuylkill Haven, Pa., and Springfield, Pa., is now with the New England Warp Co., New Haven, Conn.

—D. D. Perry, superintendent of the Pelham Mfg. Co., Pelham, Ga., having resigned, George Shipp, who was recently elected to succeed him, has assumed the duties of that position.

—J. D. Patton is now overseer of carding and spinning at the Jefferson Cotton Mills, Jefferson, Ga.

—A. J. Rose, formerly of Concord, and for the past few months superintendent of the Clayton Cotton Mill, Clayton, N. C., has been appointed superintendent of the Gibson Mfg. Co.'s mill at Concord, N. C., Supt. Goodrow having resigned.

—W. H. Robinson, recently overseer of the card room at the No. 2 Berkshire Mill, Adams, Mass., is now superintendent of the No. 3 Harmony Mill at Cohoes, N. Y.

—David Sunn, formerly boss weaver for the Manville Company, Manville, R. I., has been engaged to take charge of the slashing, warp drawing, designing and weaving departments of the Peabody Mill, Newburyport, Mass.

—George Simpson, formerly of the Johnson Manufacturing Co., North Adams, Mass., is the new winder at the Valatie Cotton Mills, Valatie, N. Y.

—W. H. Smith has resigned his position with the Goldville Manufacturing Co., Goldville, S. C., to become boss carder and spinner at the Belton Cotton Mill, Belton, Texas.

—J. C. Tiddy, of the Gastonia, N. C., Trenton Mills, is now overseer of spinning at the Pocahontas Mills, Petersburg, Va.

—William C. Nairn, formerly with the Laminar Fibre Company, North Cambridge, Mass., has severed his connection with that concern and accepted the selling agency of the Emmons Loom Harness Company, Lawrence, Mass. It is understood that Mr. Nairn will also handle part of the product of The Loom Specialties Company of Lawrence.

Woolen.

—B. A. Ashton, formerly superintendent of the F. Gray Co., Piqua, O., is now interested in the Columbus (Ohio) Woolen Mills, and is superintendent of the plant.

—S. Brown has succeeded James A. Taylor as overseer of finishing at the Consolidated Wool Felt Co., Amsterdam, N. Y.

—John Burt, formerly carder at the Essex Felt Co., of Rahway, N. J., and at the Raritan (N. J.) Woolen Mill, is now carder at the Gloversville (N. Y.) Felt Co.

—W. Burdick of Pawtucket, R. I., is boss carder at the Riverside Mills, Stafford, Conn., in place of W. Ellis.

—George Dunham, Jr., who has been connected with the Monongahela Textile Co., Morgantown, W. Va., for the past seven months, as superintendent and designer, has resigned.

—M. H. Dixon, a widely known New England woolen mill superintendent, formerly employed by Moses T. Stevens & Sons, and recently at Mechanicsville, Conn., succeeded M. Glennon at Dickeyville, Md., as superintendent for W. J. Dickey & Sons.

—E. Eaton, formerly of New Bedford, has succeeded J. Stuart as boss carder at the Scott Mill, Saugus, Mass.

—M. Glennon, for several years past superintendent of the W. J. Dickey & Sons large woolen mills at Dickeyville, Md., near Baltimore, retired from that position recently, and has accepted a similar position with the Oakland Manufacturing Company, Haight, Md., an eight-set mill.

—Edward B. Flannigan has resigned as boss finisher of the Ray Mills of the American Woolen Company, Franklin, Mass.

—William Hackley, formerly of Auburn Woolen Mill, Peterboro, Ont., is the boss dresser at the Crown No. 1 mill, Marcellus, N. Y.

—James Hamor, for several years employed as superintendent for the H. Waterbury & Sons Co., Oriskany, N. Y., resigned recently to accept a similar position at Piqua, O., with the Orr Felt & Blanket Mills, formerly operated by the F. Gray Co.

—Frank W. Hartley, who lately severed his connection with the mills of George E. Kunhardt, Lawrence, Mass., was presented by his employees with an oak desk.

—William U. Hanke, late of Reedsburg, Wis., designer, is now with the Oregon Manufacturing Co., Oregon City, Ore.

—George T. Jackson has accepted the position of superintendent and manager of the Laurel Mills Manufacturing Co., Roswell, Ga.

—John Jones, formerly of West Eaton, N. Y., is the boss dresser at the Seneca Falls Woolen Mill, Seneca Falls, N. Y.

—Evan Lewis, formerly overseer of carding for the Atlas Knitting Co., Amsterdam, N. Y., has accepted a similar position with the Waterloo (N. Y.) Woolen Manufacturing Co.

—W. J. Melrose has changed from Pascoag, R. I., to Glenville, Conn., and is now employed as boss weaver at the American Felt Company.

—Russell Manter, formerly dyer at the Burlington Mills, Winooski, Vt., has succeeded C. E. Wing as dyer at the Empire Woolen Co., Clayville, N. Y.

—James McLachlan, formerly overseer of finishing with Lafferty Bros., Philadelphia, has recently accepted a similar

position with the Mascher Street Dye & Finishing Works, Philadelphia, Pa. He was for many years overseer of finishing with the Kiamensi Woolen Mills, Stanton, Delaware.

—Mr. Munn, formerly of the Washington Mills, Lawrence, Mass., will be superintendent of the Prospect Worsted Mills, recently acquired by the American Woolen Co. His son has been selected as spinner and drawer, while the boss comber will be Thomas O'Brien, formerly of the Washington Mills.

—James Marshall has accepted the position of superintendent of the Carlton Woolen Company, Woodstock, New Brunswick.

—E. J. Nash, formerly boss carder with the Meriden (Conn.) Woolen Mills, has recently accepted a similar position with the Gwynn Falls Construction Co., Baltimore, Md.

—Daniel Prendergast, superintendent of the Byfield Woolen Company, Byfield, Mass., has resigned to accept a similar position with the Gloversville Felt Company, Gloversville, N. Y.

—George Pennycook, formerly at the Sawyer Mills, Dover, N. H., and at the Assabet Mills, Maynard, Mass., has been given full charge of the designing department, both woolen and worsted, of the Chase Mills of the American Woolen Company, Webster, Mass.

—John Riley, superintendent of the Edward Mills, Philadelphia, Pa., has accepted a similar position with Samuel Fox's Sons, proprietors of the La Porte Woolen Mills, La Porte, Ind.

—George Roberts, formerly president of the Hartford Carpet Company and subsequently vice-president of the amalgamated companies, known as the Hartford Carpet Corporation, has resigned as officer and director in the latter company. Mr. Roberts entered the old Hartford Carpet Company in 1864, and has successively filled the positions in it of secretary, assistant treasurer, treasurer, vice-president and president. He accepted the vice-presidency of the new corporation until the union of the two companies should be effected.

—Thomas H. Robinson has left Menasha, Wis., and located, with his family, at Chippewa Falls, Wis.

—E. P. Whitmore, superintendent of No. 1 Mill, Putnam, Conn., Woolen Co., has resigned. He has been connected with the company for many years.

—A. B. Widdoes, formerly superintendent of the Amsterdam (N. Y.) Woolen Mills, is now employed by the Mohawk Manufacturing Co., Oswego, N. Y.

—Samuel Waterbury, of New York, is the new superintendent of the Rotherwood, Tenn., Woolen Mills.

Knit.

—Hiram Adey has succeeded James Waterfield as knitter at the Ford Stanwix Knitting Co., Rome, N. Y. Mr. Waterfield has gone to Indiana.

—George Atkins, formerly boss spinner for the Bennington (Vt.) Knitting Co., is now with H. E. Bradford & Co., same place.

—J. F. Bard has sold his business (The Radnor Hosiery Mills of Wayne, Pa.) and accepted the position as superintendent with Mr. J. W. Hanes of Winston-Salem, N. C., manufacturer of high grade hosiery.

—H. D. Buck, late of Adrian, Mich., has been appointed superintendent of the Progressive Knitting Mills of Detroit, Mich.

—C. O. Bean, lately with the Glendora Knitting Co., New Haven, Conn., has secured the position of superintendent of the Birmingham Hosiery Mills at Birmingham, Ala., J. A. Yates, president. They manufacture seamless ribbed hosiery.

—Henry Bradley has resigned as night foreman of the plant of the Perry (N. Y.) Knitting Co., to accept a similar position at Schenectady.

—W. H. Day, owing to ill health, has resigned as president of the Newberry (S. C.) Knitting Mill, and J. E. Norwood has been elected president to succeed him.

—H. G. Johnson, late of Johnstown, N. Y., is now superintendent of the Cooper Underwear Co., Kenosha, Wis.

—Roderick Light, late of Newville, Pa., has recently accepted a position with the Park Hosiery Co., of Reading, Pa. This company recently removed from Pottstown, Pa.

—J. E. Norwood has been elected president and treasurer of the Newberry Knitting Mills Co., Newberry, S. C., to succeed W. H. Day, resigned.

—George H. Pilkington, of Pawtucket, R. I., has recently engaged with Wm. H. Grim of Hamburg, Pa., as superintendent of his bleachery, about starting up.

—James Quinlan is now with Yund, Kennedy & Yund, Amsterdam, N. Y., in the capacity of overseer of carding.

—Thomas S. Ritchie succeeds Ervin Lewis as carder at the Atlas Knitting Co., Amsterdam, N. Y.

—Peter Roberts, formerly dyer at the Cohoes (N. Y.) Knitting Mill, is the new dyer at the Beaver Knitting Co., Hudson, N. Y.

—Daniel Ryan has accepted the position of carder and spinner with the Kapner Bros. & Duga Hosiery Company, Dresden, O.

—Frank Smith, secondhand of carding at the Utica Knitting Co.'s mill, Utica, N. Y., has been promoted to overseer of that department, succeeding Herbert Taylor, who has accepted a position with the Bound Brook Woolen Mills, Bound Brook, N. J.

—A. Schremp has recently been promoted to assistant superintendent at the Capron Knitting Mill, Utica, N. Y.

—M. J. Shaughnessy has recently succeeded T. A. Calvin as superintendent at the W. H. Rowe Knitting Mill, Amsterdam, N. Y.

—Edward A. Stevens succeeds A. J. Follett as treasurer of the Glenark Knitting Co., Woonsocket, R. I. Mr. Follett continues as secretary of the company.

—Herbert Taylor, overseer of carding for the Utica Knitting Company, Utica, N. Y., has resigned that position to accept a more lucrative one in the Bound Brook Woolen Mills, Bound Brook, N. J.

—T. W. Watters, formerly of Rob Roy Hosiery Mill, Troy, N. Y., and later of the Hope Knitting Mills, Cohoes, N. Y., is now knitter at the Onandaga Knitting Mill, Syracuse, N. Y.

Deaths.

—The death of Henry A. Duhring occurred on October 8th at his residence in Philadelphia, Pa. He was born in Philadelphia in 1834. He graduated from the University of Pennsylvania, and entered the large woolen mills of his father at Downington. At the outbreak of the Civil War he joined the Thirty-second Pennsylvania Volunteers, and was for three months in active service during the invasion of Pennsylvania. He leaves a widow and one son.

—Peleg S. Barber, a leading citizen of Westerly, R. I., died recently. He was a large real estate dealer, and for 16 years was engaged in cotton manufacturing. At his death he was president of the People's Savings Bank and of the Pawtucket National Bank.

—Lucien Brown, of Philadelphia, Pa., a retired manufacturer, died after a long illness early in October. He was in his eighty-third year. Mr. Brown was born in Leicester, Mass. From 1852 to 1890 he was an active member of the firm of James Smith & Co., manufacturers of card clothing. He was also a member and a large stockholder in the James Smith Woolen Machinery Co., since the organization of that concern. He was well known in the financial and manufacturing circles of this city.

—Henry D. Sanger, many years a prominent resident of Brooklyn, and one of the oldest silk importers in New York, died last month. For years Mr. Sanger had been a member of the firm of Lee, Tweedy & Co. of New York.

—Walter Scott, recently superintendent of the Yount Woolen Mills, Yountsville, Ind., died last month. Prior to being at Yountsville he was superintendent of the Beckman Woolen Mill, Cleveland, O., and at one time was superintendent of the Cornwall Manufacturing Co., Cornwall, Ont.

—Frederick R. McLean, son of Agent Charles N. McLean of the American Mills Company, Rockville, Conn., and designer for the mills, died recently, aged 22 years.

—Charles Arnold Gorton, well known in cotton circles in New England, died recently at his home in North Smithfield, R. I., where, upon retiring from active business about twenty years ago, he purchased a farm. At the age of six years, Mr. Gorton found employment as a carder in the Bernon Mills, and rose through successive stages until he was made manager under Samuel and Paul Green, who were then at the head of the mill. Later he served in turn as superintendent of the then so-called Omega Mill at East Providence, of the Jenksville Mills, and of the mill at Jackson, R. I., controlled by Christopher Lippitt. At the time of his death he was 79 years of age.

—Fred W. Brittain, of the firm of Deering, Milliken & Co., commission merchants, died October 13 at Colorado Springs, Col. Mr. Brittain was born in Boston, Mass., August 27, 1850. The deceased had been connected with Deering, Milliken & Co. since 1876, being admitted as a partner in 1896. He had been in ill health for some time, and it was in the hope of improvement that Mr. Brittain went to Colorado.

—Alfred Schoellkopf, of the firm of Schoellkopf & Co., wool pullers, Buffalo, N. Y., died at his residence in that city, Ocotober 12.

—James Salter, formerly an importer of wool flocks, and at one time a well-known figure in the local wool trade, died at his home in New Canaan, Conn., last month, aged 86. Mr. Salter was born in Shropshire, Eng., but spent most of his life in this country. He leaves six daughters and three sons, the latter all engaged and well-known in the wool trade.

—Hon. Silas Mandeville Wheelock, one of the oldest and most widely known woolen manufacturers in the country, died last month at his late residence in Wheelocksville, Mass., from a complication of diseases, due to advancing age. Mr. Wheelock was born in Uxbridge, Mass., November 11, 1817, and commenced his connection with the woolen industry at the age of nine years. With his father and brother he was engaged in manufacturing at Wheelocksville, the firm from 1840 to 1846 being known as J. Wheelock & Sons. In the latter year his father retired, and the business was continued under the style of C. A. & S. M. Wheelock, manufacturing plaids, satinets, linseys and tweeds until 1855, when after enlarging their factory, they entered upon the manufacture of fancy cassimeres until 1890, when this mill was leased to John R. Scott and Charles E. Wheelock. In 1870, the Harris Woolen Co.'s mill at Putnam, Conn., was purchased by Mr. Wheelock, and the Putnam Woolen Co. organized. Mr. Wheelock was elected treasurer and general manager, which position he resigned in 1887 in favor of his son Eugene. In 1883 he bought the Central Mill property in Uxbridge, and a company was formed known as the Calumet Woolen Company, Mr. Wheelock being the manager and treasurer. In 1886, Mr. Wheelock bought the property known as the Uxbridge Woolen Factory, and the Calumet Woolen Co., after an increase in capital stock, took this property and operated it under the name of the Hecla Mill. Since this last purchase, Mr. Wheelock continued, as before, to be thetreasurer of the company, until 1897, when advancing age compelled him to turn the management over to his son, Arthur Wheelock, who had been the company's agent. In private life, Mr. Wheelock was one of the most companionable of men, and was noted far and wide for his benevolence. His age lacked but a little of 84 years. His two sons survive him.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the compositionof yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Slipping of the Cylinder of a Rotary Press.

Editor Textile World:

We are making large quantities of piece dyed beavers and kerseys and have a great deal of difficulty with the press. The cylinder slips on the goods so that the cloth does not pass through the machine, but wrinkles at the edges and sometimes in the centre of the pieces. At times the difficulty is so bad that the cloth remains stationary while the cylinder is running. We have repeatedly rusted the cylinder, but this does not seem to be entirely effective. The cloth runs somewhat better after the rusting, but the trouble soon reappears. Can you give us a remedy?

Cylinder (162).

From the description given of the trouble by our correspondent, we would judge that the principal cause is gum or dyestuff on the goods, which fills up the surface of the cylinder and reduces the friction to such an extent that the machine cannot carry the goods through. This trouble is very liable to occur with piece dyed goods, where more or less of the dyestuff is left in the fabric. Heavily bur dyed goods are also very liable to the difficulty. The bur dye is in the form of a loose dye attached mechanically to the goods and easily separated from the fibre. To remedy this difficulty the goods must be cleaned more thoroughly, the surplus dyestuff or dirt being removed; the cylinder should be well rusted. It may be that the cylinder has become so smooth as to necessitate draw filing. To rust the cylinder the press beds can be run back from the cylinder, and the brass jackets can be taken out or they may be protected thoroughly from water and acid by burlap or other means. The ordinary commercial sulphuric acid full strength or muriatic acid half strength should be applied and the cylinder left to stand over night. In the morning the surplus acid is well washed off and examination will determine whether the rust has sufficiently developed. During this operation the cylinder should be cold. With clean goods we do not think our correspondent will then have any difficulty.

Flax Mill.

Editor Textile World:

I would like the address of any flax mill in the U. S. A.?

Leinen (175).

The Textile World's Directory gives a complete list of both flax and linen mills in the United States.

Pump for Bleaching Liquor.

Editor Textile World:

I am in need of a pump for bleaching and dyeing liquor. The one that I am now using gives a good deal of trouble by clogging up frequently. Will you advise me in the matter?

Rotary (176).

We would advise our correspondent to try the centrifugal pump such as is used extensively for pumping thick liquors and fluids containing more or less solid matter. These pumps are built specially for different kinds of liquids and are not easily clogged. They also have the advantage that the valve can be open or closed without the necessity of stopping the pump, and they are, consequently, ready for use at all times.

Ramie Yarn.

Editor Textile World:

I would like the address of an agent for ramie yarn?

Gespinst (177).

Answered by mail.

Knitting Machinery.

Editor Textile World:

Where can I get a machine for knitting fancy hosiery such as illustrated on page 502 of your September issue?

Hose (178).

The goods referred to were imported from Germany and made on a full fashioned machine. There is but one firm, the Textile Machine Works, Reading, Pa., making such machines in this country.

Books on Rope and Cordage.

Editor Textile World:

What books are published treating of the preparation of fibres for making rope and cordage?

Rope (171).

Sharp's Flax and Jute Spinning and Leslie C. Marshall's work on the same subject treat of the preparation of these fibres for the making of rope and cordage.

The Manufacture of Lisle Thread.

Editor Textile World:

We would like to have some information concerning the manufacture of lisle thread?

Field (172).

Lisle thread derives its name from Lille, France, where it was originally made from linen for stockings and gloves. At present it is made almost entirely from Egyptian cotton. The cotton is prepared for spinning by the combing process, as the very mixed conditions of the fibres resulting from carding is not suitable for the effect desired. The yarn is usually spun wet in order to increase its solidity and afterwards is gassed to increase the smoothness of the thread. Other processes, such as calendering, etc., are frequently employed to increase the lustre. Tallow is sometimes applied to the yarn; it gives a brilliant finish and a soft, silky handle. The object sought for in the manufacture of lisle thread is smoothness, solidity and lustre.

Yarn from Cypress Bark.

Editor Textile World:

We are sending you under separate cover, samples of cypress bark. Can you give us the name of any manufacturer equipped to make this material into cheap bagging? The bark comes from South Carolina, and we understand that somewhere in the South common long-leaf pine straw is worked into cheap bagging on a large scale. As the fibre of cypress bark is much longer and stronger than pine straw, it occurred to us that it could be put to the same use.

Rind (180).

The samples referred to are at this office and we will forward samples of the material and advise our correspondent of any one interested in the subject.

Cost and Lay-Out of Cotton Goods.

Editor Textile World:

Have you a book giving the cost of manufacturing different weights and counts of cotton goods, including information as to the size of yarn used, threads per inch, weight, etc.?

Kostjager (163).

We know of no such book. The usual method employed by manufacturers to secure this information is to apply a system of cloth analysis and cost estimating to any fabrics that they may be interested in. Textile fabrics are subject to constant change and such a work as our correspondent desires would soon become out of date.

Scarlet on Turkish Rugs.

Editor Textile World:

How can I change the bright red in a Turkish rug to a pink color?

Bagdad (164).

We do not think the red in Turkish rugs can be successfully changed into a pink, as such colors when dyed upon wool are kept fast and cannot be modified to advantage.

Sacks for Bobbins.

Editor Textile World:

Can you tell me who handles second sacks suitable for packing bobbins for shipment?

Bobbin (181).

We have answered by mail and will forward advices to the party interested if desired.

Tow Manufacturers.

Editor Textile World:

I would like to be put in communication with some flax tow manufacturers who are outside of the combination, which has been recently formed among flax tow mills.

Tow (182).

Answered by mail. We will forward the addresses of manufacturers interested in this inquiry to our correspondent, if desired.

Training for a Woolen Mill Superintendent.

Editor Textile World:

I am an overseer of weaving and desire to become a woolen mill superintendent. How can I fit myself for that position? Would you advise me to secure a position as assistant superintendent?

Ambition (179).

A woolen mill superintendent should be conversant with each one of the processes of woolen manufacture. It is not necessary for him to be a skilled workman in each department, but it is essential that he have sufficient knowl-

edge of the raw material and the processes to enable him to give directions regarding the work and to locate quickly the causes of the many difficulties constantly arising in the manufacture of woolen goods.

This knowledge is acquired principally by actual experience in mill work, but that alone is not sufficient. It is necessary to learn what other people have learned before. This can be done by the study of books. A course in some textile school is of great benefit. We should not advise an overseer of weaving to seek a position as assistant superintendent in order to fit himself for the position of superintendent. The position of overseer of weaving is, possibly with the exception of that of superintendent, the best one in the mill from which to study the general manufacture of the goods, as it is the room in which the yarn is converted into cloth and a good opportunity is thus afforded to study the construction of the different textures and the effect of both good and poor work done in the previous processes of weaving. A weaving overseer has also frequent opportunities to observe the goods in the finishing room and by availing himself of these opportunities, he will acquire a knowledge of the subsequent processes as well. We consider the position of overseer of weaving to be much better than that of assistant superintendent for acquiring a practical knowledge of woolen manufacturing and for fitting one for the position of superintendent.

Our correspondent should improve every opportunity of acquiring knowledge of manufacturing; he should keep a record of all facts and data that come under his observation; these memoranda will soon become so numerous that it will be necessary to index them to permit of ready reference to the different subjects; he should study all the books relating to woolen manufacture that he can get, and should not neglect to acquire a general knowledge of the other branches of the textile industries, such as cotton, silk and knitting.

We would recommend him to secure the following books: McLaren's Spinning Wool and Worsted; Beaumont's Wool Manufacture; either Hummel's or Knecht Rawsen & Lowenthal's Manual of Dyeing. He should not, however, confine his study to these books alone. In addition to the works already named, we would advise him to get a copy of Donat, Methodik der Bindgunslehre. The text of this work is in German, but the seventy-two elaborate plates which it contains are so complete and give such a comprehension of the shaft weaving of all classes of textiles, that it will prove of great value even to those who cannot read German.

He should avoid becoming satisfied with his own knowledge of the work and especially should he avoid the habit, so often found among mill workers, of seeking to place the blame for bad work upon some one's else shoulders rather than on his own. A woolen superintendent is called upon constantly to decide as to the causes of imperfections in the goods, and by avoiding any partiality towards his own work in the weave room, our correspondent will acquire that proper grasp of the mill situation that is so essential to a superintendent when called upon to locate the causes of difficulties that may arise.

The management of help is also a very important part of the work of a mill superintendent. The position of weaving overseer affords the best opportunity for training in this respect, on account of the large number of hands under this overseer and the great extent to which good work in the weave room depends upon the carefulness of the worker.

Silk Reeling Machines.

Editor Textile World:

Where can I obtain machines for reeling or unwinding the silk from the cocoon? Cocoon (161).

Charles H. Knapp, corner Wait and Rye Sts., Paterson, N. J., can furnish these reels.

New Publications.

Factory Organization, by Emil Schmidt; Streker & Schroder, Stuttgart, Germany; price 75 cents.

The author in this work seeks to outline a system of records for the operations in an industrial establishment, including both the manufacturing and commercial operations. Various books for making the necessary records in the different departments are described and twenty-nine blank forms are given in an appendix. While the work is written with especial reference to the building of machinery, the general principles of the system can be profitably studied and applied to other industries. The work is in German and can be imported through this office.

Vienna Art Embroidery, Anton Schroll & Co., Wien, Austria; four parts; price complete, $6.00.

This work consists of four portfolios containing sheets showing patterns for embroidery work, designed by Austrian artists and students in the Vienna schools. The designs are adapted for the decoration of cushions, table cloths, chair backs, doilies, etc. The plates are colored and the collection contains some fine examples of the art. The work can be imported through this office, where a copy can be seen by any one interested.

Artistic Designs for Textiles, adapted for textile schools, manufacturers and designers, by Prof. Franz Kadlec; Anton Schroll & Co., Wien, Austria; price $15.00.

This work consists of thirty-two sheets, each 40 by 19 inches, showing color designs for textiles. Each sheet shows not only a large color design of the material but also a colored draft of the weave used. The lay-out of the goods includes the kind of material, size of yarn, woven width, threads per inch are given, also general directions for the manufacture and finish of the goods.

The collection includes fabrics for upholstery, table cloths, handkerchiefs, curtains, carpets, velvet and chenille fabrics. The designs are very handsome and the color harmony is excellent. The designs are mostly modern, although there are some examples in renaissance style.

The work can be seen at this office. We can fill orders for it.

Technolexicon, The Society of German Engineers, Berlin, Germany.

This is the title of a proposed technical lexicon, which is to be published by the Society of German Engineers. The work will include the three languages, English, French and German and a co-operation of societies and individuals throughout the world is invited.

It is intended to have the lexicon include every branch of industry, and particular attention is to be given to terms relating to textile manufacture.

The expense of publication is to be borne by the Society of German Engineers and they do not ask for any pecuniary contributions, but in a work of this magnitude they are naturally compelled to invite gratuitous co-operation from all quarters.

Every person that has had any experience in translating technical articles is aware of the difficulty of securing satisfactory results. Terms are used in each industry that are peculiar to itself. Many expressions are of local origin, and have been adopted to such an extent as to become established terms, and yet they are not found in any dictionary; consequently the best linguists are frequently unable to make intelligible translations of technical articles. For this reason, the publication of a technical lexicon such as is proposed by this German society, will be of incalculable advantage to the people of these three countries.

An experienced editor, Dr. Hubert Jansen, has been engaged for the work and his office has been established at 49 Dorotheenstrasse, Berlin (N. W.), Germany. We urge all who are in a position to aid in his work even in the slightest degree to communicate with Dr. Jansen at once. He furnishes all collaborators with indexed books arranged for the three languages. He would also like those interested in the work to send him the names of individuals, firms, and societies who are in a position to give assistance. The society which has undertaken the work is one of the leading associations of its kind in the world and is well equipped to carry out this great undertaking to a successful conclusion.

Embroidery Patterns, by Hans Denk; Anton Schroll & Co., Wien, Austria; three parts; price, complete, $1.00.

The three parts of this work contain 18 designs for embroidering in cross stitch. The plates are colored, showing the effects produced by using different colored yarns and include designs suitable for handkerchiefs, table cloths, napkins, etc. This work can be imported through this office, where a copy can be seen by any one interested.

Album of Cross Stitch Embroidery, by Hans Denk; Anton Schroll & Co.; price 50 cts. This work contains designs for cross stitch embroidery, including monograms, figures, etc.

Monograms for Cross Stitch Embroidery, by Hans Denk; Anton Schroll & Co.; 12 parts; price $1.00. In these booklets are given designs for various combinations of letters for monograms.

—Glove Trade Directory. O. H. Bames & Co., Gloversville, N. Y. Price $2.00. This directory contains a complete list of the glove manufacturers in this country and Canada, together with a list of glove buyers and the firms they represent, and the manufacturers and dealers in glove leather, glove materials, glove machinery and tools. It has evidently been compiled carefully and will be a useful assistant to all interested in the glove industry.

Country Life. Doubleday, Page & Co., New York.

We have received a copy of the first issue of this magazine, which is to be devoted, as its name indicates, to country life. The first issue begins with an article on Abandoned Farms, and is followed by Ellerslie an American Country Seat, Pleasant Homes and Gardens, Shrubbery in Home Grounds, Home Makers' Yards, The Life Story of a Frog, and The Domestic Apple of the Canadian French.

We predict that this magazine will fill a want created by the increased interest which is being taken in country life. There is a growing dissatisfaction with the cramped conditions which the city affords, with its deprivation of sunshine and fresh air. On all sides we find, particularly among those who are deprived of the advantages of the country, a desire to know more and see more of the country, where life is nearer to nature. The appearance of "Country Life" is, therefore, particularly timely, and we predict its success. The subscription price is $3.00 per year.

Dry Goods. Max Jagerhuger, Editor, New York. We have received a copy of the first issue of this journal, which is to be devoted to the interests of the wholesale dry goods merchants. Its leading features are outlined in the editorial as follows: Credit, finance, organizations, historic portraits, fashion ideas, political economy, imports and exports, custom house, personal, market reviews, and dry goods law.

The first number is very attractive both as regards contents and workmanship, and contains a portrait of Louis Ferdinand Dommerich.

We wish this new comer success and it will attain it, if the standard reached by the first number is maintained.

American Blacksmith, Buffalo, N. Y.

We have received the first number of this journal, which is to be devoted to the interests of blacksmiths, farriers,

wheelrights and carriage builders.

The first issue contains many interesting articles, among which we may mention: Elihu Burritt, the learned blacksmith; Scientific Principles of Horse Shoeing; Blacksmithing at Cornell University; Hints of Repair Work; Talks on Wheels and Axles; Veterinary and Farrier. We wish the new comer success.

Business Literature.

—Merchants' Red Book. Merchant & Co., Philadelphia, Pa. This is a catalogue. It contains illustrations and price list of a large number of the different products manufactured by Merchant & Co., Philadelphia, Pa. An inspection of the work discloses at once, not only the variety of their manufactured products, but the ample facilities which they have for producing goods from the raw material. The latter feature is illustrated by numerous views taken in their shops, showing the workmen engaged in the different operations of manufacture. A copy of the catalogue, which cannot fail to prove useful to manufacturers, will be mailed upon application.

Solvine "S.," Sykes & Street, New York. This is a leaflet distributed by Sykes & Street describing a product known as Solvine "S." which has a wide application in the manufacture of textiles, particularly in cotton goods. It is used for the purpose of softening the goods, improving the appearance and brightening the colors. It is highly recommended for finishing hosiery. It is also used as a substitute for oil in lubricating wool.

Steam Fuel; Green Fuel Economy Co., Matteawan, N. Y. This is an attractive circular describing the construction and operation of the Green Economizer, which is in use in many industrial establishments throughout the world. Many fine half tone engravings show the different instalments, and graphic charts show at a glance the results of steam making with the economizer. The book also contains many letters from users, testifying to the economy effected by the introduction of the economizer into their steam plants.

Cotton Chats No. 4; Draper Co., Hopedale, Mass. The fourth issue of this publication contains a sketch of George Draper, which is followed by a notice of patent litigation in regard to the warp stop motion.

Electric Motors Generators and Generating Sets, Catalogue No. 117; B. F. Sturtevant & Co., Boston, Mass. A circular of fifty pages in which the many generators, motors and generating sets built by Sturtevant & Co., are described and illustrated.

New Color Cards.

—Benzidine Colors on Flannelette. Farbenfabriken of Elberfeld Co., New York. We have received a book containing an elaborate collection of flannelette samples printed with benzidine colors. There are three hundred samples in the collection, one-third being dyed and discharged; one-third, slop-padded; the balance, top-dyed on aniline black. In addition to the systematic and attractive arrangement of the samples, which facilitates the examination of both the shade and method of dyeing, an index has been added, which permits of ready reference to any particular color desired.

—Ramie Effects in Woolen Goods, W. J. Matheson & Co., New York. This card contains ten samples of piece goods manufactured from a mixture of ramie and wool. The wool has been dyed in the piece, leaving the ramie white and producing very attractive mixtures of white with drab, brown, red, blue and black. These effects are practically the same as those obtained in wool dyed goods.

—Cotton Movements and Fluctuations, Latham, Alexander & Co., New York. This is the twenty-eighth annual edition of a work, which is so well known in the trade that it has become a book of reference. The cotton review of the cotton trade of the world is by Thomas Ellison of Liverpool. Reports of the cotton trade for the past season are given together with the usual daily receipts, stocks, exports, consumption, description of total visible supply, fluctuations of the staple, etc. The book is for gratuitous distribution among the friends and customers of the publishers.

—Toluylene Orange R., Farbenfabriken, New York. This sheet shows one sample of cotton yarn dyed maroon with Toluylene Orange R.

—Katigen Chrome Blue 5 G, Farbenfabriken, New York. Two samples of blue on cotton yarn are shown on this card, dyed with different percentages of Katigen Chrome Blue 5 G.

—Diamine Brilliant Scarlet "S.," W. J. Matheson & Co., Ltd., New York. This card shows fourteen samples of cotton yarn, loose cotton and cotton cloth colored with various percentages of Diamine Brilliant Scarlet S.

—Mode Shades on Velvet and Moleskin, Wm. J. Matheson & Co., Ltd., New York. A card showing 15 shades on cotton, velvet and moleskin. Full directions for dyeing with formulas are given.

—Fast Shades on Cotton Cloth, Wm. J. Matheson & Co., Ltd., New York. This card shows 40 samples of cotton cloth dyed with the Immedial colors.

—St. Denis Autogene Black, Sykes & Street, New York. We have recently received a leaflet describing this black for cotton; it is said to be very fast and easily applied at a moderate cost.

—Immedial Sky Blue, W. J. Matheson & Co., Ltd., New York. This card shows four samples of cotton yarn dyed with Immedial Sky Blue, two of them being dyed direct and two subjected to an after treatment.

—Alpha Black on Cloth, The United Indigo & Chemical Co., Boston, Mass. This card shows three samples of woolen cloth, pieces dyed black with Alpha Black 6B., S. 4B., S. & D.

A Book of Valuable Information.

Two Rivers, Wis., Oct. 28, 1901.

Editor Textile World:

We find the Textile World a book of valuable information on all subjects involved. Furthermore, we would say, it affords excellent opportunities for advertisers, as everything is so well classified in various industries mentioned.

Two Rivers Knitting Mill.

A New Card Clothing Firm.

In another column we present the advertisement of The Edma Card Clothing Co., 422 So. 5th Street, Camden, N. J. This firm is composed of Mr. J. H. Moorhouse, for 13 years superintendent of the carding department at both mills of S. K. Wilson, Trenton, N. J., and Mr. A. A. Zajotti, who was for many years with the American Card Clothing Co. The new company will deal in all kinds of card and napper clothing, stripping cards and napping wire. The long experience of both members of the Company in card clothing and its various uses enables them to meet the requirements of the trade. Orders are plentiful with them at present, and their business seems prosperous at the start.

Silver Medal.

The Jackson Belt Lacing Machine, built by the Diamond Drill & Machine Co., of Birdsboro, Pa., received the silver medal at the Pan-American Exposition, which was the highest award given to belt lacing machines. The company had a very fine exhibit of their line of machinery, having one of the most attractive displays in the machinery building.

The Incandescent Light Adjuster.

The Incandescent Electric Light Manipulator Co., who received the highest award (Bronze Medal), for automatic adjusters at the Pan-American Exposition, are meeting with splendid success in the sale of their Morse Adjuster. They state that nine out of every ten mills, factories and shops where it has been shown, place orders for same.

Saving Fuel.

Nearly two year ago the Buffalo Forge Company shipped an important mechanical induced draft plant to Japan for the Osaka Water Works in that country. A recent letter has been sent to the company expressing the highest approval of that system of mechanical induced draft, together with a statement that the coal bills have been reduced 15 per cent. With some proposed improvement in handling the firing, the engineers predict that there will be a still further saving in the amount of fuel burned. The plant has everywhere in the far East excited a great deal of interest.

L. Krauskopf.

In another column of this issue appears the advertisement of L. Krauskopf, whose main office is at 230 No. 3d Street, Philadelphia, Pa., with warehouse at 425 Oriana and 146 S. Water Street. This firm deals in all kinds of tallows, greases, oils and heavy chemicals, and makes a specialty of handling in addition, palm oil, olive oil, caustic soda, soda ash and bleaching powder for woolen mills and bleaching and dyeing establishments. The business was established in 1876 and since that time has undergone a steady development, the result of the high standard at which the products have been maintained.

Mr. Krauskopf would be pleased to quote prices for any goods in his line and we advise manufacturers to communicate with him when in want of such goods. His motto is "Once a customer, always a customer."

Addition to Works.

The Eaton, Cole & Burnham Co., of Bridgeport, Conn., manufacturers of brass and iron goods for steam, water and gas, has purchased on South Avenue extension, a large tract of land with dock property, and will erect at once a steel and brick foundry building, 400 feet long and 150 feet wide, together with power plant and buildings for tumbling barrels, cores, pattern storage, tapping department, sorting, storage, shipping, etc. Contracts for the entire work have been let to Berlin Construction Company, of Berlin, Conn.

W. W. Altemus & Son.

Responding to the general improvement in textile industries, the works of Messrs. W. W. Altemus & Son, No. 2816 North Fourth Street, Philadelphia, are running full time, and to the limit of their capacity. The concern is especially busy on the lines of their worsted machinery, the linen winder and the bobbin winder.

All of these machines are of the high class that is characteristic of the Altemus productions. To every machine they produce there is given the mechanical and practical perfection that is the first essential of modern, successful machinery.

They are constantly adding to the line of textile machinery, and every new production shows an improvement along purely practical lines. They are recommended to our readers who are in need of the machinery they manufacture.

—The sun never sets on Cross Oil Filters. The Burt Mfg. Co., of Akron, Ohio, the manufacturers, report them in use in 28 different countries. A shipment of them was recently made to Stockholm, Sweden.

—The Howard & Bullough American Machine Co., Ltd., Pawtucket, R. I., report the following orders received by them:—Granite Mills, Fall River, Mass., speeders and revolving flat cards and electric stop motion drawing frames for their No. 2 mill. Oneida Cotton Mills, Graham, N. C., picking machinery and speeders. The Osborn Mills, Fall River, Mass., electric stop motion drawing frames.

—The Burt Mfg. Co., of Akron, Ohio, have recently installed a Cross Oil Filter in the Washington monument power plant.

The Use and Abuse of Press Boards.

It is doubtless of considerable interest to many of our readers to have set before them suggestions as to the use of press paper and press boards in a steam plate press. Finishers are interested not only in getting the highest possible finish on their goods, but also in keeping the expense for press boards at the lowest possible figure.

The boards made by Mr. Henry E. Rogers at South Manchester, Conn., have been on the market for many years. The business was first started by Mr. Peter Rogers in 1832 and was taken up by Mr. Henry E. Rogers in 1841—on the death of his father. Today this business is in the hands of Mr. Knight E. Rogers, who took hold of it with his father in 1886. By coming in contact with practically all the users of press boards in the United States and Canada for a large number of years, a number of things have been learned that the reader would doubtless like to know.

They are used by almost all knitting mills that make flat goods, by woolen mills that make ladies' dress goods, flannels, broadcloths, carriage cloths, etc., also by many of the large makers of silk dress goods, and such concerns as make a specialty of finishing such goods.

Press boards are ruined quicker by the use of too much heat in the press than in any other way. This heat burns them, and they soon become so brittle that the finisher cannot handle them without having a large percentage break. This condition of affairs may be brought about in several ways. The finisher may be careless, or he may not understand that a very tough all rag fibre will become crisp when subjected to too much heat, like many other substances. On the other hand, it is often found that one press is used where there is plenty of work for two; the owner not realizing that he is putting on his finishing rooms more work than was planned for when his press was put in. The finisher must depend in such a case on heat to get quick work. It makes, however, "quick work" of the press boards.

It pays to use the right kind of a press—one that will give great pressure, and one whose plates will stand cooling with cold water. Mr. Rogers believes that live steam should never be used in the plates of such a press. Exhaust steam will give a good finish, it is more economical, and, if used properly, will not ruin the press boards. But even in using exhaust steam the discharge pipe should not be throttled. Of course the plates should be warmed throughout, but no steam pressure of any great amount should be used to do it. The finish is obtained by pressure as well as by heat.

The mills that obtain the highest results—the most permanent finish—are those that use great pressure while heating their stack but about fifteen minutes, or enough to get the goods thoroughly warmed. Then just before taking off the pressure, cold water is run into the plates, cooling the stack and setting the finish.

The experience of Mr. Rogers leads him to believe that the press board that best stands the conditions usually found in the finishing rooms is one that is made from all new rags; sometimes a linen or hemp fibre is used, but by far the most press boards are made from a new heavy cotton rag.

Extracting Dye from Cotton Seed.

A process of extracting the coloring matter from the by-products derived from the manufacture of oil from cotton seed has recently been patented in this country.

The patentee states that his process is designed and adapted for the treatment of the hulls or bran and the cake or solid residuum after the oil has been expressed. By this process the natural insolubility of the coloring-matter, caused by the presence in said seed and by-products of oils, fatty acids, and gums is first overcome. This is accomplished by treating the material with the vapor of a liquid hydrocarbon, such as naphtha, by placing the material either in bulk or, if bran, in its original bales in a suitable digester with which a hydrocarbon-vapor generator is connected in a circulating cycle.

The vapor as produced in the generator is conveyed by the pipes of the system to the upper end or part of the digester, whence it is forced downward and through the material, dissolving the oils, fatty acids, and gums and being itself condensed into liquid. This liquid as it passes through the material carries with it the dissolved oils, fatty acids, and gums into the generator.

Here the hydrocarbon is again vaporized and again passed around through the digester, the operation being continued until all of the oils, fatty acids, and gums have been dissolved and carried away from the solid material. The generator is then disconnected from the digester and hot air forced through the latter to free the material from all traces of the hydrocarbon.

The material is then removed from the digester and subjected to treatment for the dissolving and extracting of the color. This may be accomplished in various ways, but preference is given to the following method: the bran or cake steeped in cold water for several hours until decomposition commences, accompanied by the generating of ammoniacal gas.

The macerated material is then placed in a steam-extractor and subjected to the action of steam under such conditions of heat and pressure as may be practicable or desirable, that is, for about two and one-half hours, until the coloring-matter is practically all dissolved and taken up by the water of condensation, constituting a watery extract of the color, which may then be drained away from the solid matter.

Instead of subjecting the macerated material to such treatment by steam in an extractor, it may be simply boiled in an open vessel to obtain the watery extract; but this is a less efficient and satisfactory process. This watery extract may be used directly as a dye, but is preferably concentrated by evaporation, so as to reduce its bulk for handling, transportation, and sale, it being diluted the required degree when it is to be used.

This process as above described involves no saponification and relates solely to the treatment of cotton-seed material, particularly the hulls or bran, as distinguished from the pods which envelop the seeds and fiber.

Foreign Orders.

The London office of the Buffalo Forge Co., recently opened at 39 Victoria Street, London, S. W., under the management of D. W. Roper, M. E., has closed an important contract for apparatus to be used in heating and ventilating the machine shop, foundry stores, carpenters' shop and box factory of the new plant of the British Westinghouse Electric and Manufacturing Company, at Old Trafford Park, Manchester, England. The machine shop building is 900 feet long, 420 feet wide and 59 feet high. To accomplish the heating and ventilating of this area eight steel-plate fans each one capable of delivering 60,000 cubic feet of air per minute, and driven by a separate induction motor, will be provided; also a separate heater for each fan, a total of more than ten miles of one inch pipe being used.

Textile Awards at the Pan-American Exposition.

The following awards have been made for exhibits of textiles:

Gold medals—Arlington Mills, worsteds and cotton goods; American Woolen Company, woolen goods; L. C. Chase & Company, plush goods; Crompton Company, corduroys and velveteens; Garner & Company, cotton goods; Globe Woolen Company, woolen goods; Lorraine Manufacturing Company, woolens and cotton goods; Manville Company, cotton goods; New York Mills, cotton goods; Peace Dale Manufacturing Company, woolens and worsteds; Stockton Woolen Mills, raw and dyed wools, blankets and woolens; Oldham Mills, upholstery fabrics; W. & J. Sloane, carpets; Clarence Whitman & Co., cotton goods.

Silver medals have been awarded to the following: American Buffalo Robe Company, astrakan cloth; Amory, Browne & Co., cotton goods; Lowell Weaving Company, sail duck; Mission Woolen Mills, woolens; McCallum Silk Hosiery Company, silk hosiery; W. H. Rowe & Co., underwear; Regal Textile Company, fleeced and ribbed underwear; Richter Manufacturing Company, tapestrolea; Wanskuck Company, woolens.

Custom Decision.

A recent decision of the Treasury Department refers to paragraph 302 of the Dingley law, which so far as it is pertinent to the case in question reads as follows:

302. Cotton thread and carded yarn, warps or warp yarn, in singles, . . . not colored, bleached, dyed, or advanced beyond the condition of singles by grouping or twisting two or more single yarns together, three cents per pound on all numbers up to and including number fifteen, one-fifth of a cent per number per pound on all numbers exceeding number fifteen and up to and including number thirty, and one-fourth of a cent per number per pound on all numbers exceeding number thirty; colored, bleached, dyed, combed or advanced beyond the condition of singles by grouping or twisting two or more single yarns together, . . . six cents per pound on all numbers up to and including number twenty, and on all numbers exceeding number twenty and up to number eighty, one-fourth of one cent per number per pound; on number eighty and above, three-tenths of one cent per number per pound. . . .

The goods upon which the assessment was in dispute were composed of No. 135 cotton yarn doubled. The collector assessed 40½ cents per yard on the goods. He arrived at this rate by multiplying 135 by 3/10.

The importers protested, claiming that the duty should be reckoned as follows:

	Rate per pound.
Up to number 20, inclusive, or 20 numbers of the aggregate.....	$0.06
Above that up to number 30, or 50 numbers of the aggregate, at one-fourth cent per number per pound	.1475
On number 80 and above, or 56 numbers of the aggregate, at three-tenths cent per number per pound	..168
	.3755

The Treasury Department upheld the collector and the specific duty of 40½ cents per yard is held to be correct.

Cotton Conveying Systems.

The Byfield Woolen Co., of Boston, Mass., have recently placed with the Sterling Blower & Pipe Mfg. Co., Hartford, Conn., the order for a cotton conveying system for their Byfield plant.

The Sterling cotton conveying systems are guaranteed by the Sterling people to perfectly handle the cotton by means of a blower fitted with the Sterling improved wool wheel; by the use of the Sterling cotton and wool distributing switches the cotton can be deposited in any desired bin.

The Sterling Co. have offices in various places, where a force of mechanical engineers is maintained and prospective buyers may be assured of prompt attention. This company guarantee that purchasers will obtain desired results. Their main office is located at 44 Huyshope Ave., Hartford, Conn., to which all correspondence should be addressed. An office has recently been opened at Norfolk, Va. Branch offices are also at Boston and New York.

Where a Belt is Like a Gear.

Under ordinary conditions a gear will transmit all the power it receives in a uniform, positive way without variations in speed. A belt will not do this because of its tendency to slip under overload. The manufacturers of Cling-Surface guarantee that a belt treated with their belt dressing will transmit the power without slipping, and to deliver all the power it receives with no loss, as steadily as a gear can and with the belt running easy. They report having some interesting literature for textile plants.

—Level Dye Colors on Ladies' Cloth. Farbenfabriken of Elberfeld Co., New York. This card shows 40 attractive samples of dress goods dyed in the piece. Many attractive shades are shown and full directions for handling the material are given.

Fall Hunting in the Maine Woods.

The hunting season is now on and the sportsmen have already commenced to migrate towards the inexhaustible woodlands and forests of Maine where game in abundance can be found.

The reports received this year state that deer are more plentiful than ever before, and during the close season hunters who had gone down to camp early so as to get a line on their whereabouts and be able to bag a few deer at the outset, were startled at the great numbers which appeared to be everywhere.

From the Moosehead lake country reports are to the effect that the guides are making ready for more sportsmen than ever before, and scores of moose have been seen in that vicinity.

The country along the Penobscot River and the Aroostook region are fairly alive this year with deer, and this is also considered a remarkably good moose territory.

Maine offers scenes and pleasures in the line of fishing and hunting all her own, and in the chase for big game, she has no competitors. Deer are not only more numerous in Maine, but they grow to a much larger size, and the person who knows how to handle a gun at all, is reasonably sure of his full quota of deer and moose.

Although deer and moose are usually enough to satisfy the appetite of the average sportsman, still they are by no means the only kinds of game to be found in these vast timberlands. Braces of smaller game, together with a plentiful supply of partridge and quail have already been brought into camp; and in that section which lies contiguous to the Dead River Region, and known as the Rangeley Region, the farmers are very much troubled on account of the numerous depredations which have this year been made by bears on the orchards and corn-fields. Bears are much more numerous this season than ever before, and to the sportsman who enjoys this exciting sport, this portion of Maine is an especially desirable spot.

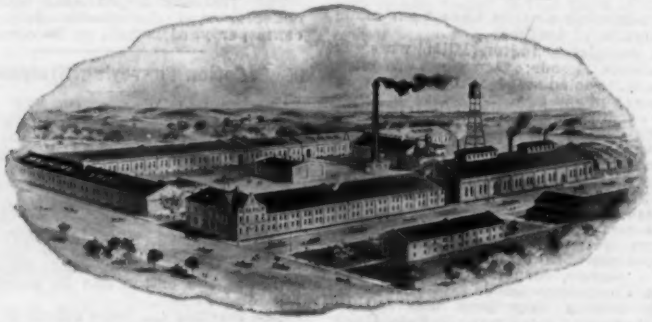
All ways now lead to Maine, and the Boston & Maine Railroad is the only road out of New England that makes direct connections for the heart of the hunting and fishing region.

Send two-cent stamp to the General Passenger Department, Boston & Maine Railroad, Boston, for their illustrated book called "Fishing and Hunting."

Water Tanks and Towers.

The tanks and towers made by the W. E. Caldwell Co., Louisville, Ky., are in use from Alaska to South America. They have proved their reliability in all climates and are approved by the insurance underwriters for risks protected by storage of water in tanks. They are made of wood and steel. Red gulf cypress is used exclusively for the wood parts. The durability of this material is well known. Cypress timbers which have been underground for over fifty years have been excavated in New Orleans, and found to be as sound as when cut from the log. The wood shrinks and swells but very little; this quality is especially valuable in wood used for tanks as they are affected but slightly by standing empty. The water in cypress tanks does not freeze as quickly as in steel tanks. The Caldwell Co., are, however, equipped for building steel tanks for those who prefer them. Our illustration gives a view of the Caldwell works at Louisville.

The width and thickness of each hoop in the Caldwell tanks is gauged to secure a factor of safety of 5 to 1; and each hoop is placed at such a distance from its neighbor, as trial has proved to be best adapted to hold the tank water-tight.



The outfit in the accompanying illustration was built by the Caldwell Co., for the Columbia Mfg. Co., Ramseur, N. C. The tower is 51 feet high and the tank has a capacity of 20,000 gallons. A descriptive catalogue of the various styles of tanks and towers built by this firm can be obtained by addressing W. E. Caldwell Co., Louisville, Ky.

—The Howard & Bullough American Machine Company, Pawtucket, R. I., report a repeat order for speeders from the Pocasset Manufacturing Co., Fall River, Mass., and that they have a large staff of fitters erecting new machinery in the Woodstock Cotton Mills, Anniston, Ala. The entire equipment of machinery for the Yazoo Cotton Mills, Yazoo City, Miss., is being furnished by these machine builders, and is now being placed in position.

—The Easley Cotton Mills, Easley, S. C., have adopted the American Moistening Company's system of humidifiers.

Graduating Exercises of the New Bedford Textile School.

These graduating exercises were held on October 24th. Geo. E. Briggs, President of the Board of Trustees, made the opening address and was followed by Rufus A. Soule, President of the Massachusetts Senate, who spoke on behalf of the Commonwealth.

William E. Hatch, Superintendent of the New Bedford Schools, then made an address and was followed by Herbert E. Walmsley, agent of the Wamsutta mills, who spoke for the New England Cotton Manufacturers' association, and presented the medal, which this body offered to the most successful student, to Nelson Allen Wood.

John Waldron, Secretary of the Carders' Union, then spoke from the operatives' point of view.

In the absence of Robert Burgess, chairman of the education committee, the diplomas and certificates were presented by Isaac B. Tompkins, treasurer

of the board of trustees, who spoke briefly before distributing them.

Following is the list of graduates:

Day Classes, Diploma Courses.

General cotton manufacturing course: Arthur Roy Dickinson, Fall River; Thomas Thompson Gifford, Nelson Allen Wood.

Yarn mill superintendent's course: Milo Louis Moss, Manchester, N. H.

Weave mill superintendent's course: Charles Edward Buckley, Lester Evans Hawes, South Dartmouth.

The Name, Babcock and Wilcox.

In the suit of The Babcock & Wilcox Company against the Joshua Hendy Machine Works, a decree has been entered in the United States Circuit Court for the Northern District of California, as follows:

"That a perpetual injunction be and it is hereby issued against the respondent, the Joshua Hendy Machine Works, and its officers, agents, attorneys, servants, clerks and employees, enjoining it and them and each of them from using the name 'Babcock & Wilcox' either alone or combined with other word or words upon or in connection with the sale or offering for sale of any boiler or other steam apparatus not manufactured by the complainant and from stating or representing that any boiler or other steam apparatus sold or dealt in by the respondent and not manufactured by complainant is a Babcock & Wilcox boiler, and from selling or offering for sale, or passing off any such boiler or other steam apparatus, as and for boilers or steam apparatus manufactured and sold by complainant."

Loom Harness.

The Henry Jeffery Loom Harness Co., Woonsocket, R. I., have been manufacturing loom harness for over twenty-five years. During this time the growth of their business has been steady, the result of the high standard at which their goods have been maintained. They are able to report numerous cases, where their harness have been in constant use from two to five years, and they state that one case is on record where a mill used the Jeffery harness for five years, at an annual cost of 35 cents per loom.

They use a durable enamel finish, which greatly prolongs the life of the harness. They wish to call the attention of manufacturers to their line of goods and solicit a trial order.

Further information may be obtained from the Henry Jeffery Loom Harness Co., Woonsocket, R. I.

A Boy Can Run It.

A subscriber to the Textile World writes: "That automatic yarn dyeing and scouring machine, advertised in your journal, is a fine working machine. It does its work all right, and requires no attention, and is certainly worth the while of any mill that scours or dyes yarn to try it, and I predict it will have a big sale. A boy can run it, and get just as good work as skilled help.

Buffalo Forge Co.

A gold medal has been given the Buffalo Forge Company for a 500 horse power high speed tandem compound engine operating in the service power plant, and for the Buffalo fan system of heating and ventilating using Buffalo blowers and fans. The silver medal which has been awarded was for Buffalo hand punches and shears and for Buffalo forges, induced draft apparatus, and blacksmith drills. We might note also in this connection that this was the highest award given for any articles of this nature.

J. I. Lyle, M. E., who has been connected with the home office of this company for the past five years, is now manager of the New York branch, 39-41 Cortlandt Street.

Instruction by Mail.

The American Correspondence School of Textiles, New Bedford, Mass., furnishes by mail complete courses of instruction in all branches of textile manufacturing. These courses of study are so clearly and practically arranged that it is possible for anyone who will study faithfully to acquire a knowledge of textiles at a moderate cost without leaving the regular work in the mill.

Education by correspondence has during recent years become an established institution; and the idea is particularly well adapted to the needs of mill workers.

Considerable interest in the progress of this correspondence textile school has been evinced by mill men all over the country, and hundreds of testimonials from students who have been benefited by the courses of study show plainly that the institution is a success.

This school has just issued a very complete and interesting catalogue which will be sent to any person interested in the study of textiles. Address the school care of C. P. Brooks, Director, New Bedford, Mass.

Air Moistening.

The American Moistening Company, Boston, Mass., reports a large volume of business in hand, having received orders during the last ten months for over 3000 humidifiers. The merit of their system of air moistening is generally recognized, and has been adopted in the South by mills representing over 2,000,000 spindles.

Among the orders recently received by this company, we note the following: The New York Mills, N. Y., have placed a repeat order for humidifiers. President Leroy Springs of the Lancaster Cotton Mills, Lancaster, S. C., has placed an order for the complete equipment of their No. 2 mill. The Woodruff Cotton Mills, Woodruff, S. C., have adopted the American Moistening Company's system of humidifiers. The Fort Mill, and Mill Fort Mills, Fort Mills, S. C., have placed an order for humidifiers.

—The Anderson Cotton Mills, Anderson, S. C., have placed a large repeat order for humidifiers with the American Moistening Company, Boston, Mass.

Notes Among Western Mills.

At La Crosse, Wis., the La Crosse Knitting Works have had a very successful season and are still busy filling orders. John Branagan is in charge of the yarn manufacturing.

At Prairie du Chien, Wis., the Prairie du Chien Woolen Mill Co., have shared in the general prosperity. The managers are straining every nerve to make hay while the sun shines. This company has a well equipped two-set mill and is now figuring on adding two more sets of machinery. At Davenport, Iowa, the Davenport Mills Co., are busy, with good prospects. J. J. Dalton is superintendent. Their production is mostly blankets and homespuns. At Des Moines, Iowa, the Capitol City Woolen Mills are doing a rushing business. S. S. Stevenson is superintendent. They are making a fine line of cassimeres, which are manufactured into pants at the mill. The Buell Mfg. Co., St. Joseph, Mo., are fully occupied with orders. Percy L. Clay is general manager and J. E. Custer is superintendent. Their daily production consists of about 600 pairs of blankets and Pullman robes. I noticed a marked improvement in this mill since my last visit.

At Oakland, Kansas, the Topeka Woolen Mill Co., are having steady business. Their product is manufactured into pants at the mill. It is said that they have never shut down the plant for lack of orders since it was started. At North Topeka I found a brand new plant containing two sets of the latest machinery. J. F. McAfee is the manager. He is very busy getting the mill started. They expect to make their entire production into pants. At Sedalia, Mo., the J. A. Lamy Mfg. Co., are very busy. They convert every yard of their product into men's wear garments and also manufacture overalls, jumpers, etc. The California Woolen Mill, California, Mo., is badly crippled for lack of water, as they have to haul every drop of water they are now using on account of the severe drought in this part of the country.

Meek Bros., Bonaparte, Iowa, are running full with plenty of orders ahead. Prospects are bright for this concern. Here also they make the largest part of their product into men's wear garments.

F.

New Bedford Textile School.

Arrangements have been made for the scholarship at the New Bedford Textile School, which Mr. Firth presented to the New England Cotton Manufacturers' Association. It is especially gratifying to the Trustees of that Institution and to the Managing Director that this school should have been selected to receive the first textile scholarship established in the United States.

The object of the New Bedford Textile School has always been to make a specialty of Cotton Manufacturing and the excellence of its equipment and curriculum has drawn students from all parts of the United States in large numbers who desire to receive a thorough, practical and theoretical training in Cotton Manufacturing.

—Messrs. Brower & Love Bros., Indianapolis, Ind. are introducing a large system of humidifiers, ordered of the American Moistening Company, Boston, Mass.

It's the "Know How" That Counts.

The Berry Wheel is widely known in the textile trade, where hundreds of them are in use under all sorts of trying conditions.

It may not be so generally known that the manufacturer, A. Hun Berry, 23 West First Street, Boston, Mass., undertakes the solution of the different ventilating, heating and drying problems that present themselves. The old-time method with which most manufacturers were content was to sell a wheel and let the manufacturer use it in any way that he saw fit.

A man may be a first-class manufacturer, and yet, without special experience, not know how to use a wheel to best advantage, in fact, often using a fan with very little benefit to himself or even credit to the fan.

The natural progress in this line of business has, therefore, been for the fan manufacturer to broaden his field and undertake the entire contract for accomplishing the work for which the fan is only a part. Take the case of an upright dryer: a common method is for the fan to be applied at the bottom, forcing the outside air, with all its moisture, directly on the hot air coil, through the dryer, and blowing a good share of it out through the top or through the opening where the cloth is fed in. With the Berry system, the fan is placed where it will best control the air passing through the apparatus. All moisture is thus condensed and dry air is again drawn through the dryer, taking up again its load of moisture from the goods, and in this way accomplishes remarkable results in drying fabrics, not only in the capacity of the dryer, but in the feel of the cloth afterwards. It comes out without the harsh, brash feeling which is so objectionable.

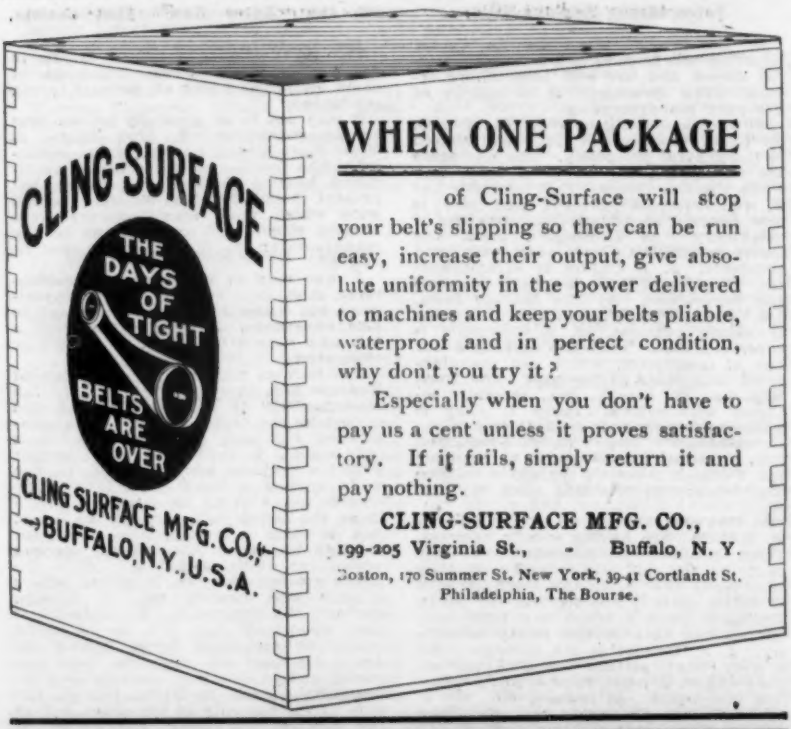
The American Woolen Co. have recently fitted up five of their mills with the Berry system of drying, and the Standish Worsted Co. have just adopted the same system.

For carbonizing, this system is especially adapted. After the fabric has been dried, a sort of reversal of the process takes place; the condenser is discontinued, and what might be called a supplementary heater is brought into use, bringing the temperature to a high point very quickly, and the goods are carbonized in the same apparatus in which they were dried.

Special personal attention is given in each case, and the installation is based upon the requirements. It might surprise some manufacturers who are apparently satisfied in this department to learn what other mills have done and are doing.

General Berry has some interesting figures from actual experience "before and after." In some cases manufacturers had felt that they were doing well enough, and were astonished that such improvement could be shown.

—We understand the Egberts Woolen Mill at Cohoes, N. Y., filled with first-class knitting machinery, is offered for lease on most attractive terms. A fine opportunity for an individual or company to commence business promptly and with a moderate amount of capital.



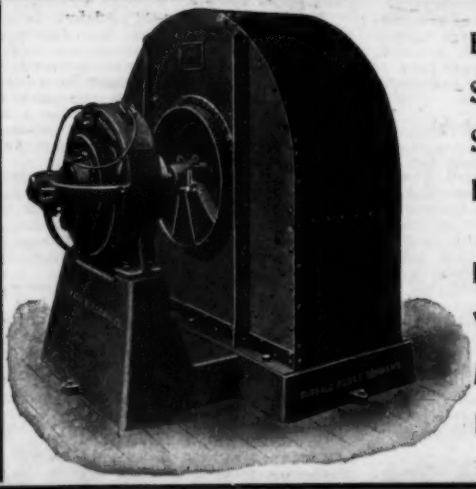
WHEN ONE PACKAGE

of Cling-Surface will stop your belt's slipping so they can be run easy, increase their output, give absolute uniformity in the power delivered to machines and keep your belts pliable, waterproof and in perfect condition, why don't you try it?

Especially when you don't have to pay us a cent unless it proves satisfactory. If it fails, simply return it and pay nothing.

CLING-SURFACE MFG. CO.,
199-205 Virginia St., - Buffalo, N. Y.
Boston, 170 Summer St. New York, 39-41 Cortlandt St.
Philadelphia, The Bourse.

Buffalo Forge Company Buffalo



Buffalo
Steel Plate Fans
Steam,
Pulley, Electric,
FOR
Heating,
Ventilating, Drying,
Mechanical
Draft, etc.

Buffalo Forge Company Buffalo

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

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American Moistening Co., 150 Devonshire St., Boston.

Architects and Mill Engineers.
Ferguson, John W., Paterson, N. J.
Gray, Arthur F., Exchange Bldg., Boston.
Lockwood, Greene & Co., 93 Federal St., Boston, Mass.
Prarsay, C. A. M. & Co., Banigan Bldg., Providence, R. I.

Artificial Stone.
Warren Bros. Co., 143 Federal St., Boston.

Asphalting & Asphalt Materials.
Warren Bros. Co , 143 Federal St., Boston.

Asphalt Roofing.
Warren Bros. Co. 143 Federal St., Boston.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Philadelphia Dyeing Machinery Co., 6721 Germantown Ave., Phila., Pa.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Baling Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

Bandings.
See under Yarns.

Bands and Labels.
Docker-Foster Co., Phila., Pa.

Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Boston Belting Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Jeffrey Manufacturing Co., Columbus, Ohio.
Link Belt Machinery Co., Chicago, Ill.
Main Belting Co, 1219 Carpenter St, Phila.
Popham, Henry, & son, Newark, New Jersey.
Shultz Belting Co., St. Louis, Mo.
Smith, Jas. Woolen Mach. Co., Phila, Pa.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Cling Surface Co., 168 Virginia St., Buffalo, N. Y.
Main Belting Co, 1219 Carpenter St, Phila.
Stephenson Mfg. Co., Albany, N. Y.

Belt Hooks.
Bristol Co., Waterbury, Ct.

Belt Lacing Machine.
Diamond Drill & Machine Co., Walnut St, Birdsboro, Pa.

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See Tapes and Braids.

Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Block Cutting for Printing.
Atlas Copper Stamp Works, 15 Whitehall St., New York.
International Mfg. Co., Brooklyn, N. Y.

Blowers, and Blower Systems.
American Blower Co., Detroit, Mich.
Buffalo Forge Co., Buffalo, N. Y.
The Sterling Blower & Pipe Mfg. Co., 44 Haynhope St, Hartford, Conn.
Sturtevant, B. F. Co., Boston, Mass.

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Murray, C. O., Nashua, N. H.
Southern Bobbin Co., Greensboro, N. C.
Sweet & Doyle, Cohoes, N. Y.
Tebbets, E. L., & Co., Locke's Mill, Me.

Boilers.
See Steam Boilers.

Boxes, Cloth Boards, Etc.
Pearson, J. T, Kensington, Pa.

Boxes Paper.
See Paper Boxes.

Braiding Machinery.
New England Butt Co., Providence, R. I.
Textile Machine Works, Reading, Pa.

Braids.
See Tapes, Braids and Edgings.

Brass (Perforated.)
See under Perforated Metal.

Brushes.
Felton, S. A. & Son Co., Manchester, N. H.
Jacobus, A. G. Verona, N. J.
Parks & Woolson Mach. Co., Springfield, Vt.

Brushers
See Napping Machines.

Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester Mass.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch) Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
See also Dyeing, Bleaching Machinery, etc.

Canvas Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Carbonizing Machinery.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts , Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Edma Card Clothing Co, 422 S. 5th St, Camden, N. J.
Leigh, Evan A, 35 Mason Building, Boston

Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Smith, Jas. Woolen Machinery Co., Phila.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, W. W, & Son, 2616 N. 4th St, Phila, Pa.
Curtis & Marble Machine Co, Worcester, Ms.
Furbush, M. A, & Son, Machine Co, Phila, Pa.
Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Smith, Jas. Woolen Machinery Co., Phila.

Cement "Dealers."
Warren Bros. Co., 143 Federal St., Boston.

Chemicals and Apparatus.
Fiedt, Geo. D. & Co, 328 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Cigars.
Taylor & Stinson, 482 Bourse, Phila, Pa.
Cling Surface.
Cling Surface Mfg. Co., Buffalo, N. Y.
Clocks.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Prentiss Clock Imp. Co, 49 Dey St, N. Y.
Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Combs (Wool and Cotton)
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.
Commission Merchants (Dry Goods, Knit Goods).
Charleston Export & Commission Co., Charleston, S. C.
Doane, Thomas H., 233 Monroe St., Chicago, Ill.
Concrete.
Warren Bros. Co., 143 Federal St, Boston.
Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
Link Belt Machines Co., Chicago, Ill.
The Sterling Blower & Pipe Mfg. Co., Hartford, Conn.
Cop Tubes.
See Paper Tubes.
Copper Gaskets.
U. S. Mineral Wool Co., 149 Liberty St., New York.
Copper (Perforated.)
See under Perforated Metal.
Copper Print Rollers.
Phillips Co, The Thomas, Providence, R. I.
Taunton-New Bedford Copper Co, New Bedford, Mass.
Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Link Belt Machinery Co., Chicago Ill.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila-Pa.
Ashworth, Elijah, Fall River, Mass.
Atherton, A. T., Machine Co., Pawtucket, R. I.
Barber & Coleman, Pemberton Sq., Boston.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Houghton, L. T. & Sons, Worcester, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co., Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Lowe, Stephen C., 186 Devonshire St., Boston, Agt. John Hetherington & Sons, Ltd.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G, Boston, Mass.
Parks & Woolson Mach. Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Wks, Whitinsville, Mass.
Cotton Openers and Lappers.
Atherton, A. T., Machine Co., Pawtucket R. I.
Kitson Machine Co, Lowell, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Cotton Softeners.
Boston & Lane, Boston, Mass.
Cotton Waste.
Charles, W. B., Amsterdam, N. Y.
Credits.
National Mercantile Agency, New York and Boston.
Cutters for Knit Fabrics.
Goodwin, J. C., Diamond and Second Sts., Phila., Pa.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.
Dextrine.
Stein, Hirsh & Co, 165 Duane St., New York.
Dryers.
American Blower Co., Detroit.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Hunter, Jas., Machine Co., No. Adams Mass.
Kenyon, D. R. & Son, Raritan, N. J.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I
Rhoden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co., 34 Oliver St., Boston, Mass.
Dusters.
See Wool and Waste Dusters.
Dust Collectors.
Allington & Curtis Mfg. Co., Saginaw, Mich.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Dyers, Bleachers and Finishers
American Yarn Printing Works, 134-136 North 22d St., Philadelphia.
Barnesville Mfg. Co., Barnesville, Ga.
Brophy's, T, Sons, Jasper St, Philadelphia
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3rd St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co., Kensington, Pa.
Franklin Bleaching & Finishing Works, Ltd., 70th St., and Haverford Ave., Phila.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Pond Lily Co., New Haven, Ct.
Providence Mills Mfg. Co., 55 Girard Ave., Philadelphia, Pa.
Rowland, Samuel, Schuylkill Haven, Pa.
Silver Spring Bleaching Co, Manayunk, Pa.
U S. Finishing Co., New York.
Warren, W, Thread Works, Westfield, Mass.
Dyeing, Drying, Bleaching and Finishing Machinery.
American Blower Co., Detroit.
Automatic Dyeing & Scouring Machinery Co., 776 E. 163rd Street, New York

Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Antisdel, E. M., 12 Miller St., Utica, N. Y., (Knit Dryer.)
Birch Bros. (Albert Birch), Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Dubois, A. N., 2170 Sedgely Ave., Philadelphia, Pa. (Black for Hosiery.)
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Howard, Geo. C., 1788 Barker St., Phila., Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.
Knapp, C. H., Paterson, N. J.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6731 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Philadelphia Textile Specialty Co, 500 North 12th St., Phila.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rosden Machine Co., Warren, R. I.
Smith, Jas. Woolen Machinery Co., Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Webendorfer & Walling, Paterson, N. J.

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dyehouse Floors.
Warren Bros., 143 Federal St., Boston.

Dye Sticks.
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M., Philadelphia, Pa.

Dyestuffs and Chemicals.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, A Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Calmore & Co., 501 Chestnut St, Phila.
Corey, S. J., 278 Congress St, Boston.
Dillon & Co. 20 Cedar St, New York.
Dubois, A. N., 2170 Sedgely Ave., Phila. Pa.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Fortner, L. B., 36 Strawberry St., Phila.
Geisenheimer & Co, 189 Front St, New York.
Holliday & Sons, Ltd., Read, 7 Platt St., New York.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 122 Hudson St, N. Y.
Krauskopf, L., 430 North 3rd St., Phila.
Kuttroff, Pickhardt & Co., New York.
Matheson, W. J. & Co, 182-184 Front St, N. Y.
Molt Bros. Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Roessler & Hasslacher Chemical Co, 100 William St, New York.
Schoellkopf Hartford & Hanna Co., Philadelphia, N. Y. and Boston.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Stamford Mfg. Co, 133-137 Front St., N. Y.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed M., 106 Broad St., Boston, Mass.
United Indigo & Chemical Co., Ltd., 176 Federal St., Boston.
Vila, H S., 115 So 2nd St., Philadelphia, Pa.

Dynamos.
General Electric Co., 44 Broad St., New York
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Elastic Web Calendering Machines.
Knapp, C. H., Paterson, N. J.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Eastern Machinery Co, The, New Haven Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., 1788 Barker St., Phila., Pa.

Electrical Construction.
General Electric Co., 44 Broad St., New York.

Electric Fans.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
General Electric Co., 44 Broad St., New York.
Philadelphia Drying Machinery Co., 6731 Germantown Ave., Phila., Pa
Sturtevant Co., B. F., Boston.

Electric Lighting.
General Electric Co., 44 Broad St., New York.

Electric Lighting Apparatus.
Incandescent Electric Light Manipulator Co., 168 Bedford St., Boston.

Electric Motors.
General Electric Co., 44 Broad St., New York.
Sturtevant Co., B. F., Boston.

Engine Foundations.
Warren Bros. Co., 143 Federal St., Boston.

Engineers, Mechanical.
Ferguson, John W, Paterson, N. J.

Exhaust Heads.
Burt Manufacturing Co, Akron, Ohio.
The Sterling Blower & Pipe Mfg. Co., 44 Hupshope St, Hartford, Conn.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co., Matteawan N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Scaife, W. B. & Sons, Pittsburg, Pa.

Feeds
See Automatic Feeds.

Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums
Eastern Machinery Co., New Haven, Conn.

Fuel Economizers.
Green Fuel Economizer Co., Matteawan, N. Y.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas. Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Garnetts.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Smith, Jas. Woolen Machinery Co., Phila.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B F., Boston.

Gears.
New Process Raw Hide Co., Syracuse, N. Y.

Gear Cutting Machine.
Whiton, The D. E. Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F, Boston.

Grate Bars.
U. S. Rocking Grate Bar Co., Elizabeth, N. J.

Heating
See Ventilating.

Heddles.
Steel-Heddle Mfg. Co., 1842 Germantown Ave., Phila,

Watson, L. S, Mfg. Co, Leicester, Mass.

Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.

Hose.
Boston Belting Co., Boston.

Hosiery Labels.
Docker, Foster Co., Philadelphia, Pa.
Saranac Electrical Mfg. Co., St. Joseph, Mich.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Humidifying Apparatus.
American Air Moistening Co., Boston.

Hydro Extractors.
American Tool & Machine Co., Boston.
Rusden Machine Co., Warren, R. I.

Ironing Machines for Knit Goods.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.

Jacquard Cards.
Rogers, H. E, South Manchester, Conn.

Key Seaters.
Leisenring Mfg. Co., Philadelphia, Pa.

Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Chapin, Geo. W. Philadelphia, Pa.
Charles, W, B., Amsterdam, N. Y.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger Mfg Co, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Schneebeli, G. A. & Co., Nazareth, Penn.
Weimar Bros, 1817 East York St, Phila Pa.

Knit Goods Finishing Machines, Crochet, Etc.
Craw, J. W. Laundry Machinery Co., So. Norwalk, Conn.
Industrial Mfg. Co., Camden, N J.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.

Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford & Holt, Little Falls, N. Y.

Knitting Machinery.
American Knitting Machine Co., 6th and Arch St. Philadelphia. Pa.
Antisdel, E. M., 12 Miller St., Utica, N Y.
Beattie, Wm. & Son, Cohoes, N. Y.
Branson Machine Co., 506 N. American St., Philadelphia.
Brinton, H. & Co., 213 Race St., Philadelphia Pa.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Goodwin, J. C. Second and Diamond Sts., Phila., Pa. (Cutters.)
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y.
Keystone Knitting Machine Mfg. Co., 40 N. 7th St., Phila.
Lamb Knitting Mach. Mfg. Co., Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller. Arthur, 760 Lexington Avenue., Brooklyn, N. Y.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co. Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.
Tompkins Bros., Troy, N. Y.

Knitting Needles and Supplies.
Breedon, Wm, & Son, Amsterdam, N. Y.
Brinton, H. & Co., 213 Race St., Philadelphia, Pa.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co., Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Keystone Knitting Machine Mfg. Co., 40 N 7th St., Philadelphia.
Lamb Knitting Machine Mfg. Co., Chicopee Falls, Mass.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.

Knotter for Spoolers.
Barber & Coleman, 504 Sears Bldg., Boston.

Labeling Machine.
Saranac Electrical Mfg. Co., St. Joseph Mich.

Laboratory Outfits.
Feidt, Geo. D. & Co, 528 Arch St. Phila, Pa.

Leather Boards.
Rogers, H. E, South Manchester, Conn.

Looms.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 23d and Wood Sts. Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St, Phila., Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Ross, Hugh R., Belfast, Ireland.
Smith, Jas. Woolen Machinery Co., Phila.
Whitin Machine Works, Whitinsville, Mass.

Loom Harnesses.
Jeffrey Loom Harness Co, The Henry, Woonsocket, R. I.

Loom Pickers.
Loom Picker Co., Biddeford, Me.

Lubricators
Dixon, Jos., Crucible Co, Jersey City, N. J.

Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.

Lumpers.
Gerry, George, & Son, Athol, Mass.

Machinery Dealers.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia.

Machinists' Tools.
Dodge Mfg Co., Mishawaka, Ind.
Leisenring Mfg. Co., Philadelphia, Pa.
Whiton, The D. E. Co, New London, Conn.

Mails.
Walder, J, Paterson, N. J.

Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ma.
Elliott & Hall, 54½ Hermon St, Worcester Mass.
Fabric Measuring & Packaging Co., Postal Telegraph Bldg, New York.
Parks & Woolson Mach Co, Springfield, Vt.

Mechanical Draft.
American Blower Co., Detroit.
Buffalo Forge Co., Buffalo, N. Y.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave. Hartford, Conn.
Sturtevant Co., B. F., Boston.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Klauder Weldon Dyeing Machine Co., Amsterdam, N. Y.
Philadelphia Textile Specialty Co., 500 North 12th St, Phila.
Rusden Machine Co., Warren, R. I.

Mill Architects.
See Architects & Mill Engineers.

Mill Baskets.
Lane, W. T. & Bro., Port Chester, N. Y.

Mill Brushes.
See Brushes.
Mill Builders and Engineers.
Ferguson, John W, Paterson, N. J.
Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Passoag, R. I.
Bristol, The, Co., Waterbury, Conn.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Carpenter, Geo. B. & Co., Chicago, Ill.
Dixon Lubricating Saddle Co., Bristol, R.I
Dodge Mfg. Co., Mishawak-, Ind.
Douglas, R. D., Fall River, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Lane, W. T. & Bro., Port Chester, N. Y.
Leisenring, John Mfg Co., Phila., Pa.
Main Belting Co, 1219 Carpenter St, Phila.
National Supply Co , Paterson, N. J.
Smith, Jas. Woolen Machinery Co., Phila.
Southern Bobbin Co., Greensboro, N. C.
Steel-Heddle Mfg. Co., 1842 Germantown Ave. Phila.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sweet & Doyle, Cohoes, N. Y
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.
Napping Machines.
Columbia Napping Machine Co., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Mach. Co., Springfield, Vt.
Noils (Silk.)
Ryle, Wm & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.
Oil Cabinets.
New York Oil Cabinet Co., New York.
Oil Filters.
Burt Manufacturing Co., Akron, Ohio.
Oil, Grease, Tallow.
Krauskopf, L , 430 North 3rd St., Phila.
Oilless Bearings.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Packing.
Boston Belting Co , Boston.
Jenkins Bros., New York.
Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.
Paper Tubes.
Douglas, R. D., Fall River, Mass.
Patent Solicitors.
Crosby & Gregory, 24 School St, Boston, Mass.
Siggers, E. G., Washington D. C.
Wolhaupter, D. P., Equitable Bldg., Washton, D. C.
Pavers & Paving Materials.
Warren Bros. Co., 143 Federal St., Boston.
Perforated Metal.
Beckley, A. J. & Co., Garwood, N. J.
Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.
Picker Sticks.
Loom Picker Co., Biddeford, Me.
Southern Bobbin Co., Greensboro, N. C.
Pipe Covering.
Keasbey, R. A. 83 Warren St, New York.
Pneumatic Conveying.
See Ventilating.
Power Transmitting Machinery.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Carpenter, Geo. B. & Co , Chicago Ill.
Dodge Mfg. Co , Mishawaka, Ind.
Durable Wire Rope Co., 178 Congress St., Boston.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., 1788 Barker St., Phila., Pa.
Hunter, Jas, Machine Co. No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Link Belt Machinery Co, Chicago, Ill.
Rusden Machine Co., Warren, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Phila.
Saginaw Manufacturing Co., Saginaw, Mich.
Smith, Jas. Woolen Machinery Co., Phila.
Preparatory Machinery, (Cotton).
Atherton, A. F., Mach. Co., Pawtucket, R. I.
Howard & Bullough Am. Machine Co., Pawtucket, R. I.
Kitson Machine Co., Lowell, Mass.
Saco & Pettee Machine Shops, Newton Upper Falls, Mass.
Press Boards and Fenders.
Rogers, H. E, South Manchester, Conn.
Presses.
Boomer & Boschert Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Crawford, J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ma
Hart, Charles, Frankford, Philadelphia.
Howard, Geo. C., 1788 Barker St., Phila., Pa
Phillips Co, The Thomas, Providence, R. I.
Printers (Fabrics and Yarn.)
American Yarn Printing Works, Philadelphia.
Pulley Covers.
Warren Co , The (Inc.), 34 Jackson St , Chicago, Ill.
Pulleys.
See Power Transmitting Machinery.
Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.
Purifying & Filtration Plants.
Scaife, W. B. & Sons, Pittsburg, Pa.
Rag Pickers.
Smith, Jas. Woolen Mach. Co., Phila, Pa
Raw Hide Gears.
New Process Raw Hide Co. Syracuse, N. Y
Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Leisenring, John Mfg. Co., Phila.
Loom Picker Co., Biddeford, Me.
Walder, J, Paterson, N. J.
Reeds and Harnesses.
Jeffery Loom Harness Co, The Henry, Woonsocket, R. I.
Ribbons.
Barton, F. C., 54 Franklin St., New York.
Cheney Bros, S. Manchester, Ct.
Ring Travellers.
National Ring Traveller Co., Providence, R. I.
Morley Button Mfg. Co., Boston.
Roofing Asphalt.
Warren Bros. Co., 143 Federal St., Boston.
Roofing Materials (Manufacturers).
Warren Bros. Co., 143 Federal St., Boston.
Rope Transmission.
American Mfg. Co., New York.
Carpenter, Geo. B & Co., Chicago, Ill.
Dodge Mfg. Co , Mishawaka, Ind.
Durable Wire Rope Co., 178 Congress St Boston, Mass.
Link Belt Mfg. Co., Chicago, Ill.
Roving Cans.
Diamond State Fibre Co., Elsmere, Del.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 960 Manton Ave. Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.
Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.
Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I
Sample Cards and Mounting.
Merchants Sample Card Co., 33 Sullivan St., New York.
Scales
Sweet& Doyle, Cohoes, N. Y.
Schools.
American Correspondence School of Textile, New Bedford, Mass
Georgia School of Technology, Atlanta, Ga.
New Bedford Textile School, New Bedford, Mass.

Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.

Screens (Perforated.)
See under Perforated Metal.

Selling Agents.
See Commission Merchants.

Separators.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Draper Co , The, Hopedale, Mass.

Sewing Machines and Supplies.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch), Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Fales, L. F., Walpole, Mass.
Industrial Mfg. Co., Camden, N. J.
Manufacturers' Supplies Co , 66 No. 4th St., Philadelphia.
Rusden Machine Co., Warren, R. I.
Union Button Sewing Mch. Co., 164 High St., Boston.
Wilcox & Gibbs S. M. Co., New York.

Shafting Hangers, Etc.
See Power Transmission Machinery.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co. Cohoes, N. Y
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H., Paterson, N. J.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros. (Albert Birch). Somerville. Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H , Paterson, N. J.
Rusden Machine Co., Warren, R. I.

Sizing, Starch and Gums.
Arabol Mfg. Co., 155 William St., New York.
O. K. Soap Co., 908 Franklin St., Phila.
Stein, Hirsch & Co, 165 Duane St, New York.

Sky Lights.
Drouve, The G. Co., Bridgeport, Ct.

Slashers.
Cohoes Fndry & Machine Co, Cohoes, N. Y.
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R.I.

Soaps.
India Alkali Works, Boston, Mass.
O. K. Soap Co., 908 Franklin St., Phila.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj'a, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Undergrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 900 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj'a. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Spool Cotton for Mfrs. Use.
Warren, W. Thread Works, Westfield, Mass.

Spooler Knotter.
Barber & Coleman, 11 Pemberton Sq, Boston.

Sprinklers
International Sprinkler Co., Philadelphia, Pa.

Stamps for Hosiery.
Atlas Copper Stamp Works, 15 Whitehall st , N. Y.
International Crepe Paper Co., Brooklyn, N. Y.
Wells, Wilfred, 805 W. Lehigh Ave., Philadelphia.

Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co , Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co, Hamilton, O.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia.
Jenkins Bros., New York.
Rusden Machine Co., Warren, R. I.
Sterling Blower & Pipe Mfg. Co, The, 44 Huyshope Ave, Hartford, Conn.
Sturtevant Co., B. F., Boston.
U. S. Rocking Grate Bar Co., Elizabeth, N.J

Steam Valves.
Jenkins Bros., New York.

Stop Motion for Looms.
See, also, Warp Stop Motions.
Tucker Stop Motion Co., Winsted, Ct.

Tanks, Tubs and Vats.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co. Warren, R.I.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Barton, F. C., 54 Franklin St., New York.
Cathcart, John, & Co, 115 Franklin St, N. Y
Chapin, Geo. W. Philadelphia, Pa.
Friedberger Mfg. Co, Germantown, Pa.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Schneebeli, G. A. & Co., Nazareth, Pa.
Weimar Bros, 1217 East York St, Phila, Pa.

Temples.
Draper Co., Hopedale, Mass.

Tension Pulleys.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
N. E. Ventilating & Heating Co, 900 Manton Ave, Providence, R. I.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tenter Clips.
See Dyeing, Drying, Bleaching and Finishing Machinery.

Testing Machines.
Howard, Geo. C., 1733 Barker St., Phila., Pa

Textile Schools.
See Schools.

Thread Board for Spinning & Twisting Frames.
Houghton, L. T. & Sons, Worcester, Mass.

Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.

Tickets and Labels.
Saranac Electrical Mfg Co. St. Joseph, Mich.

Towers.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.

Tower Clocks.
Howard E. Clock Co., 403 Washington St., Boston; 41 Maiden Lane, New York.
Turbine Governors.
Replogle Governor Works, Akron, O.
Turbines.
(See Water Wheels.)
Valves—Rubber.
Boston Belting Co., Boston, Mass.
Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston.
American Blower Co., Detroit, Mich.
Berry, A. Hun, 28 W. 1st St, Boston, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Drouve, The G. C., Bridgeport, Ct.
New England Ventilating & Heating Co, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philapelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
The Sterling Blower & Pipe Mfg. Co., 44 Huyshope St, Hartford, Conn.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.
Wall Whitening.
Moore, Benj. & Co, Brooklyn, N. Y.
Warp Stop Motions.
Draper Co., Hopedale, Mass.
Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers (Albert Birch), Somerville, Mass
Butterworth, H. W. & Sons Co., Philadelphia.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R., & Son, Raritan, N. J.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co, Warren, R. I.
Watchman's Clocks.
Am. Watchman's Time Detector Co., Broadway, N. Y.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Howard, E. Clock Co., 403 Washington St., Boston, Mass., 41 Maiden Lane, New York.
Nanz & Co, 127 Duane St., New York.
Waterproof Floors.
Warren Bros. Co., 143 Federal St., Boston.
Water Purifiers & Filters.
Scaife, W. B. & Sons, Pittsburg, Pa.
Water Wheels.
Alcott, T. C., & Son, Mt. Holly, N. J.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.
Water Wheel Governors.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Replogle Governor Works, Akron, O.
Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.
Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.
Winders. (Hosiery.)
Altemus, W. W. & Son, Philadelphia.
Foster Machine Co., Westfield, Mass.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia.
Universal Winding Co, 95 South Street Boston.
Wood Pulleys.
Dodge Mfg Co., Mishawaka, Ind.
Saginaw Manufacturing Co, Saginaw, Mich.
Wool Cleaning Compound.
India Alkali Works, Boston.
Wool Combing Machinery.
Leigh, Evan A. 35 Mason Bldg., Boston.
Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo. & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.
Woolen and Worsted Machinery.
Altemus, W. W, & Co, 2816 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arguto Oilless Bearing Co, Wayne Junction, Phila.
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers (Albert Birch), Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass
Fales, L. F, Walpole, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Lever, Oswald, Lehigh Ave. and Mascher St., Philadelphia, Pa.
Lowe, Stephen C., 186 Devonshire St., Boston. Agt. John Hetherington & Sons, Ltd.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave, Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
Smith, Jas. Woolen Machinery Co., Phila.
Wool Shoddies.
Becker, Chas. W., Agt., Amsterdam, N. Y.
Slack, Wm. H. B., & Bro, Springfield, Vt.
Wool Washing, Preparing and Drying Machinery.
Hunter, Jas. Machine Co., No. Adams, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Phila.
Phillips Co, The Thomas, Providence, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Smith, Jas. Woolen Machinery Co., Phila.

YARNS, THREADS, ETC.

Banding.
Moore, C. & Co. 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns.
American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Barnesville, Mfg. Co., Barnesville Ga.
British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Buckingham & Paulson, 83 Leonard St. New York.
Catlin & Co, New York and Boston.
Charles, W. B., Amsterdam, N. Y.
Dana Warp Mills, Westbrook Me.
Dexter Yarn Co., Pawtucket, R. I.
Dodds, J. S., 517 Wool Exchange, New York.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E. & Co, Boston and Phila, Pa.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Morgan, E. A. 54 Franklin St., N. Y.
New England Cotton Yarn Co, New Bedford, Mass.

Orswell Mills, Fitchburg, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns Wool Spun.

Broadbent, J. & Sons, Unionville, Conn.

Flax. Hemp. Jute and Rumie.

Fawcett, Hughes, 115 Franklin St., N. Y.
Eichmann & Sternberg, 530 Broadway, N. Y.
Morgan, E. A., 54 Franklin St., N. Y.

Gassed Yarns.

British Cotton and Wool Dyers' Association, Ltd , 231 Chestnut St., Phila., Pa.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
New England Cotton Yarn Co , New Bedford, Mass.

Glazed Yarns.

Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twine.

Cranston Worsted Mills, Bristol, R. I.
Eichmann & Sternberg, 530 Broadway, N. Y.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Morgan, E. A., 54 Franklin St., N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

Barnesville Mfg. Co., Barnesville, Ga.
Boyer, B. F, & Co, Camden, N. J.
British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Broadbent, J. & Sons, Unionville, Conn.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Herbst, Albert & Co., E. Allegheny Ave., Philadelphia.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic, Mass.
New England Cotton Yarn Co., New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Rockwell, E. M., Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co. N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Mercerized Yarns.

British Cotton and Wool Dyers' Association, Ltd., 231 Chestnut St., Phila., Pa.
Dodds, J. S., 517 Wool Exchange, New York.
Eichmann & Sternberg, 530 Broadway, N. Y.
Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co , Philadelphia.
Montgomery, J. R. & Co., Windsor Locks, Conn.
Morgan, E. A., 54 Franklin St., N. Y.

Mohair Yarns.

Cranston Worsted Mills, Bristol, R. I.
Goff, D. & Sons, Pawtucket, R. I.
Queensbury Mills, Worcester, Mass.
Skerry, A. T. & Co., 47 Leonard St., N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc

Cranston Worsted Mills, Bristol, R. I
Eichmann & Sternberg, 530 Broadway, New York.
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut St, Phila, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard, St, N. Y.

Silk Yarns.

Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Eichmann & Sternberg, 530 Broadway, New York.
Mason, Dan'l, Voorhis Mill, Paterson, N. J.
Ryle Wm. & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.

Boyer, B. F, & Co, Camden, N. J.
Broadbent, J. & Sons, Unionville, Conn.
Eddy & Street, Providence, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
Rockwell, E. M, Leominster, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

Worsted Yarns.

Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F, & Co, Camden, N. J.
Campion, Richard, 17 Bank St., Philadelphia.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson Ave., Camden, N. J.
Goff, D. & Sons, Pawtucket, R. I.
Herbst, Albert, & Co., E. Allegheny Ave., Philadelphia.
Pocasset Worsted Co., Thornton, R. I.
Queensbury Mills, Worcester, Mass.
Salkeld, A. D. & Bro., 66 Leonard St., N. Y
Skerry, A. T, & Co, 47 Leonard St, N. Y.

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A thoroughly first-class, reliable superintendent, who fully understands spinning, knitting, bleaching and finishing ladies-Swiss ribbed underwear. State experience and salary expected. Address "Seph," care of Textile World, Boston, Mass.

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To manufacture Gloves, Mittens and Hosiery. Must start in small way. Have building, machinery, etc. Small capital required Address "Box C," care of Textile World Boston, Mass.

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Complete outfit for dye house, both for wool and cotton, with aniline plant attached consisting of oxidizing cages, tom to m, extractor, blower and heater. To be sold cheap. Echo Knitting Mills, 537 Albany St., Boston, Mass.

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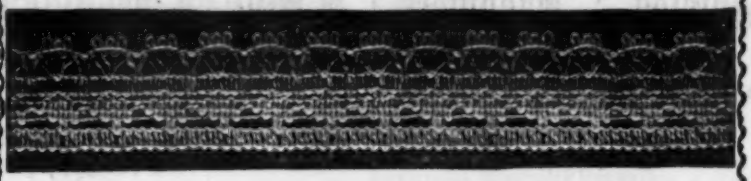

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The advertisers in the following columns should be addressed in care of TEXTILE WORLD or inquiries concerning them may be addressed directly to "Information Department TEXTILE WORLD," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

The applications of good overseers in every department, who are in want of positions are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

WOOLEN SUPERINTENDENTS.

1829 **Woolen Supt.**, or asst. or dyer. Age 35; American; married. Has worked on kerseys, coverts, worsteds, cassimeres, etc. Is familiar with Davis & Furber jackets and mules, and Crompton & Knowles.

1916 **Agent or Supt.**, who understands designing and also the work of every department, is open to a position. Has been a superintendent for the last 15 years, and is thoroughly competent to take charge of a large mill. Scotch Irish; 38 years old; married. Has turned out all classes of woolen and worsted goods in all wool and in wool substitutes. Is well up in the mixing and blending of stocks. References of the best.

1890 **Manager or Supt.** of a woolen mill, who understands designing, is open to an engagement. 34 years old; Scotch, and single. Large experience in Scotch and Canadian mills on tweeds, worteds, overcoatings, etc. Good references.

1891 **Supt. of Woolen or Worsted** Mill, who understands designing, is open to a position. 23 years of age; an American; single. Well recommended, and with good experience.

1818 **Supt.** Worked on fancy cassimeres and worsteds. Age 40; American; married. First class man in every respect, and large experience.

1930 **Asst. Supt.**, woolen or worsted, or overseer of twisting, spooling, dressing. Age 40; American; married. Is familiar with English and American machinery. Excellent references.

1936 **Supt. or Designer.** Age 38; American; married. Has worked on worsted, cotton worsted, cassimeres, meltons, blankets and flannels. Been designer and also Supt. and designer in first-class N. E. mills.

1575 **Assistant Supt. Woolen.** A graduate of the Philadelphia Textile School (highest standing), and has had more than 7 years' experience in the various departments of a Massachusetts mill. Wants to get a start where there is fair chance of advancement. Age 28, single.

1924 **Assistant Supt.**, boss weaver and boss dresser desires a position in a woolen mill. 30 years of age; an American; married. Has worked on all classes of woolen goods on both English and American machinery. Good references from former employers. 15 years' experience.

COTTON SUPERINTENDENTS.

1877 **Agent or Treasurer.** Good references. Recently assistant manager of a large mill. Fully competent.

1918 **Supt. of Cotton Yarn** or plain cloth mill is desirous of obtaining a position. Is a native of Georgia; 29 years old; married. A splendid manager of Southern help and has worked in every department of a cotton mill on all good makes of machinery. Can refer to several large cotton mill owners.

1867 **Assistant Manager** who understands the handling of cottons and linens, desires position in a cotton mill. 24 years of age; American; unmarried. Can satisfy anyone in regard to references, experience, etc.

1806 **Supt. of a Cotton Weaving Mill**, colored or white, 5,000 to 10,000 spindles; or overseer of weaving in a cotton mill, on any kind of work and any size mill, white or colored. Will go East, West, North or South, Canada or Mexico. Has had good and long experience. A married man; 40 years old, strictly temperate. Can give references as to ability and character.

1527 **Supt. of Cotton Mill**, or overseer of mule or ring spinning is open to a position; 16 years experience in Northern mills, on yarns, denims, awnings, apron checks, bievele suitings, shirtings, etc. etc. Familiar with all well-known makes of cotton machinery; 29 years old; American; married. Can give references from large Massachusetts mills.

1898 **Cotton Supt.**, 33 years old, married, and an American, experienced on coarse and fine yarns and white goods, is open to a position. Conversant with all standard makes of cotton machinery. Can refer to prominent Mass. men in the cotton trade.

1896 **General Manager** and Superintendent of cotton mill desires position; 37 years old; single; English. 18 years' experience on yarns, flannelettes, denims, grays, and shirtings. Good references.

1938 **Supt.** or Supt. and Designer. Age 35; Scotch; married. Fine and plain fancy ginghams, shirtings, fine sheer fabrics, cotton and worsted dress goods, plain and Jacquard silks and Jacquard bed quilts, also print cloths. Crompton & Knowles looms. All kinds of winding, beaming, warping and quilting machinery, also finishing. At present studying picking, carding and spinning machinery.

WOOLEN CARDERS.

1314 **Overseer of Carding** Age 32; American; married. Beavers, kerseys, tricots, broad cloths, cassimeres, dress goods, flannels, army and navy cloth. Well spoken of by former employers.

1270 **Boss Carder** (and spinner, if desired) in an underwear or hosiery mill. Fine and heavy wool and cotton. German; age 34. First class man in every respect. Excellent references.

1899 **Worsted Carder.** 9 years in large mill in Lawrence, would like a position; 23 years old; English; single. Has worked on almost all grades of stock, and understands all well-known makes in worsted cards. Good references.

1903 **Boss Carder,** woolen or worsted mill, desires a position. Experienced on fine and coarse work; 27 years of age; American; married. Can refer to responsible parties Moderate wages desired. Will go to any part of United States.

1827 **Overseer of Woolen Card** Room. Has worked on blankets, robes, friezes, cheviots, kerseys, flannels, knit goods, cassimeres, hair lines and unions. Age 34; American; married. Wants not less than $3.00 per day.

1660 **Overseer of Woolen Carding.** Does not want to go out of N. E. States. Age 48; American; married. Many years' experience as overseer and has excellent references. Has worked on nearly every class of goods manufactured in N. E., and is familiar with nearly all machinery.

COTTON CARDERS.

1886 **Overseer of Cotton Carding;** 31 years of age; married; of English parentage; desires position in the Middle, Atlantic or New England States. Familiar with Lowell, Fettee, Biddeford, Woonsocket, Whitin, Mason and all makes of pickers of above machinery. Good references.

1893 **Boss Carder of Cotton.** 38 years old; married; an American; who can also handle a weave room of from 300 to 500 looms, wishes to make a change. Has had over 15 years' experience in New England mills. Best of references.

1919 **Overseer Cotton Carding and** Spinning, who has had an experience of over 10 years in N. E. and New York mills, is open to a position. 26 years old; American; single. Thoroughly competent and reliable. Best of references.

1931 **Overseer of Carding and Combing;** 33 years old; American; single. Has worked on all classes of fine combed work; both American and English machinery. Can take place immediately. 12 years in a large New England mill.

1932 **Overseer of Carding** or would take assistant superintendent position. Age 27; American; single. Carded and combed American, Egyptian and Sea Island Cotton, making yarns from 8s to 100s; both plain and colored goods. Can come at once

1929 **Overseer** cotton carding and spinning is open to a position in any part of U. S. Age 31; German; single. 12 years' experience as overseer carding in important cotton spinning mills in France, Germany, Bohemia and Italy. Specialty of Egyptian and American combed fine yarns. Best of references.

WOOLEN WEAVERS.

1645 **Overseer Weaving.** Age 30; married, American. Has worked in weave room since he was 17 years old, as weaver, fixer and secondhand of weaving, except for a short time was traveling salesman. Has worked on ladies' dress goods, men's fine worsted suitings, overcoatings, cloakings, etc., on Crompton & Knowles and Jacquard looms. Excellent references.

1878 **Woolen** Overseer of Weave room. American; married. Very large experience in New England mills, on union cassimeres, chinchillas, dress goods, meltons, kerseys, fancy woolen suitings, and government goods, also fine fancy worsted suitings. Knowles & Crompton looms. A 1 references.

1482 **Weaver or Wool Sorter.** Has worked on cassimeres, cheviots, tricots, kerseys and cloakings. Good references.

1937 **Boss Weaver.** Can furnish excellent recommendations. Is a first-class man on all kinds of fancy woolen goods, and is thoroughly posted on Crompton & Knowles looms. Wants a place at $3.75 or $3.00 per day. Will go anywhere. Age 39; American; married.

1688 **Overseer of Weaving** in large mill, designer in small mill, or assistant designer in a large mill. Age 28; German; single. Has worked on beavers, chinchillas, fine cassimeres, fine fancy worsteds, ladies' dress goods, army goods, union cassimeres and other classes of goods. Strictly temperate and industrious.

1922 **Boss Weaver or Loom Fixer** on Crompton & Knowles looms, 48 years of age, English, married, desires a position in the West or South. Is thoroughly experienced on cassimeres, flannels and jeans. Good references from large Western mills. One worker in family who can grind and keep shears in good repair.

COTTON WEAVERS.

1934 **Overseer of Weaving.** Age 31; English; married. Worked on sheetings, sateens, twills, fancies of all kinds and fancy lenos and lappets. 14 years experience as loom fixer and 1½ months as second hand.

1235 **Overseer of Cotton Weaving,** with long experience in large Eastern cotton mills, is open to a position. Has handled prints, twills, sateens, lenos, cheviots, dress goods, and also Jacquard cloths. Thoroughly understands Lowell, Crompton & Knowles, Whitin and English looms. 37 years of age; American; single. Best of references from former employers.

1879 **Overseer of Weaving** or Assistant Supt. 17 years' experience in New England cotton mills, having charge of 1300 looms for 6 years recently. Fine and coarse goods on all well known machinery. Best of references.

1826 **Wanted by Steady, Industrious** man, a situation as overseer, in Tape mill. Has had considerable experience, but does not know everything, but willing to improve. $2.25 per day. Has been overseer a short time, and has perfect control of help. Age 46; English; married. No family. Would go anywhere, and settle.

WOOLEN SPINNERS.

1927 **Overseer Spinning,** carding or flyers. 37 years old; married, and can furnish best of references. Twenty-three years' experience. A German.

1784 **Worsted Drawer and Spinner.** Would take twisting. Age 2?; English; single. Can furnish references as to ability and character.

633 **Woolen Mule Spinner** desires to move from Maine on account of wife's health. At present in good position. Age 37; married, Scotchman.

1912 **Boss Worsted Spinner** on cop and flyer frames, who is also familiar with spooling, reeling, skein winding and dressing, is open to a position. Thirty-three years old; American and single. Has had 19 years' experience in one of the largest worsted mills in N. E., making yarns from 1⅛s to 56s from domestic and foreign wools. Has also handled mohair and camel hair. Good references.

1917 **Overseer Woolen Spinning.** Is thoroughly competent to take charge of a large spinning room. 38 years old; French; married. Has spun yarns for flannels, tweeds and knit goods, also cotton and wool mixes, shoddies, ranging in all from ⅜ to 14 runs. Is familiar with Davis & Furber, Johnson & Bassett, Platt and other makes. Very satisfactory references.

COTTON SPINNERS.

1068 **Overseer of Frame Spinning,** Twisting, Spooling and Warping desires position and would accept that of second-hand. Has worked in some of the best mills in N. E. (37 years old, an American and single) on Nos. running from 4s to 60s. Is familiar with Whitin, Mason, Biddeford and Lowell machines. Will go to any of the N. E. or Middle States. A1 references, and does not expect a fancy price.

1869 **Overseer or Second Hand** of ring spinning, cone winding, twisting, spooling, cop winding, reeling. 27 years of age; American; single. Of good experience on fine and coarse cotton yarns. Competent and reliable and used to handling all the well known makes of machinery. Will go anywhere. Good references.

1915 **Overseer of Ring Spinning,** or carding, would like a position in a cotton mill. Is familiar with fine and coarse yarns and almost all Amer can machinery. An American; 33 years of age; married. Best of references.

1753 **Overseer of Spinning** wants position in the South. Has worked on prints, flannels, sheets, colored double nap flannel dress goods. Age 28; married; American. Excellent references from past employers.

1750 **Overseer of Ring Spinning,** spooling and Warping. Has been overseer in large mills, and can furnish best of references. Age 28; American; single. Has worked on ducks, prints, sheetings and fancies.

DESIGNERS.

1445 **Designer or Finisher,** or will take position as supt. of a small mill. German; Protestant; age 36; married. Has worked in several New England mills, and refers to them. Graduate of the Werden Textile School, Saxony. Has worked on kerseys, beavers, cassimeres, cheviots, etc. Is familiar with all makes of American and German machinery.

1838 **Designer,** assistant supt., assistant designer, overseer of weaving, secondhand large weave room, loom fixer, boss spooler, dresser, or mender Age 48; American; single. Worked on worsteds, cassimeres, dress goods, blankets, chinchillas, cloakings, etc All patterns of Crompton & Knowles looms, Davis & Furber spooling, dressing and weaving machinery, and Worcester warp compressor.

1599 **Assistant Designer.** A young man who is studying woolen and worsted designing would like an opportunity to get practical experience, and will accept very small wages Has worked in mill for two years as weaver on Crompton & Knowles looms. Excellent references as to character.

1685 **Boss Dresser or Assistant Designer.** Has taken a thorough course in designing, and is well up in calculations and in the making of fancy men's wear goods of all kinds. Has worked in Scotland and three years in this country. His knowledge of yarn calculations and practical experience as dresser tender makes him well fitted to fill a position as boss dresser and to run a room in an up to date and efficient manner, or to fill a position as designer or assistant.

1923 **Assistant Designer** on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references.

1888 **A German Designer,** who understands all machinery necessary for the manufacture of men's wear, woolen or worsted, is open to a position at $3000 per year. Eight years' experience in Germany and five years' in one of the largest mills in the United States. 35 years of age, and single. Best of references.

1897 **A Young Man,** 28 years of age, competent to handle the designing for a cotton or silk mill, would like a position. Has made in cotton, plain, fancy and leno; in silk, tie silks, dress goods and linings. Looms all well-known makes. Is Scotch, and single. 14 years' experience in weave room and designing room. Good references from N. J. and Conn. mills. Four workers in family—weavers.

1837 **Designer** in small mill, or assistant in large mill. Age 2?; Scotch; single. Has worked on fancy cassimeres, plaid backs, coverts, unions, worsted trouserings and shirtings. Fair knowledge of Jacquard designing. Johnson & Bassett mules, Davis & Furber dresser, and Knowles looms. Is willing to work for moderate salary, with chance of promotion.

1789 **Designer,** or assistant supt. and designer. An A1 color designer. Can get up good line of fancy woolen and worsted goods which will be good sellers and profitable to the manufacturer. Graduate of a prominent designing and textile school in Germany. Is well posted on all kinds of stock, cotton and shoddy, and with the general work of a woolen mill.

FINISHERS.

1771 **Boss Finisher,** or would take good secondhand position. Has worked on all classes of goods. Age 53; Scotch; married. Reason for his wishing to change is on account of mill where he is now employed not running steadily

1437 **Overseer of Finishing** desires a position in a woolen mill. Is familiar with chinchillas, kerseys, cassimeres, dress goods, casket cloths, worsteds, etc; 33 years of age and single; steady and industrious, and can give good references.

1911 **A Boss Finisher** of over 20 years' experience on cassimeres, flannels, dress goods cloakings and worsteds, is open to a position. Understands Parks & Woolson, Curtis & Marble, Hunter, Miller Press Co., Rodney Hunt and other machines. Married; 44 years old, and can give good references. Over 15 years in last place.

1921 **Boss Finisher** of a satinet mill or secondhand of a woolen mill, would like a position. Has held these positions in good sized mills, and is familiar with satinets and woolens. 23 years of age; American; single. Good references as to steadiness, reliability and quality of work.

1716 **Finisher.** Age 29; English; married. Has worked as wet finisher-shearer, gigger, second-hand and overseer. Prefers a mill making cassimeres, worsteds, dress goods and face finished goods. A high grade of goods. Is familiar with all kinds of American and English finishing machinery, and can keep same in the best of repairs. Prefers Eastern States. Can take position at one week's notice. Best of references.

1887 **Overseer of Finishing** in a cotton or worsted mill, having several years' experience on cotton flannels, shirtings, blankets, crashes, cotton and worsted dress goods, and carriage cloths, is open to a position. 25 years of age; American; married, and strictly temperate. Will go to any part of the United States, except West. Best of references.

1900 **Boss Finisher** of men's wear, ladies' dress goods, worsteds, cassimeres, kerseys, cotton and woolen mixes, who has gained his experience as finisher in some of the large English and American mills, is open to a position. Is familiar with all standard makes of finishing machinery; 48 years of age; Scotch; married. Can refer to well-known men.

1909 **Boss Finisher** of worsted, woolen and cotton dress goods, and an expert examiner, would like a position. 25 years old; English. Long experience, and can refer to some of the largest finishing establishments in the East. One worker in family.

1526 **Foreman of Finishing Room,** Folding Packing, etc. Age 45; married; English. Has worked on white and colored goods and prints. Is acquainted with every kind of machinery used in his business. Has worked 11 years in this country. Can give good references.

1489 **Boss Finisher. Second-Hand** or Boss Shearer. Well experienced; excellent references. English; age 27; single.

1658 **Overseer Woolen Finishing.** Age 35; married. A number of years' experience as overseer in first-class N. E. mills. Worked principally on kerseys, meltons, unions and cassimeres, and is familiar with Curtis & Marble, Parks & Woolson and Cleveland machines. First-class references.

DYERS.

1505 **Boss Dyer** 11 years experience coloring according to the requirements of the trade, on all kinds of wool, worsted yarns, worsted piece dyes, cotton warp worsted piece dyes, cotton and shoddy piece dyes, shoddy, raw cotton and cotton yarns. Willing to work for reasonable wages.

1933 **Foreman Bleacher** and Dyer on cotton goods. Has a specialty of dyeing fast oxidized black on piece goods. Is also a color dyer. Age 34; English; married. Prefers Middle or Southern states.

1303 **Manager of Dye Works,** or boss dyer, who has been connected with some of the largest dye houses both in England and the United States is open to a position. Understands piece dyeing of all kinds, cotton, wool, mohair and alpaca; pile fabrics; knit goods, wool and cotton; yarns, wool, silk and cotton; raw stock; and wool and merino shoddies. Is 36 years old; English; married. Good references from a number of prominent men in the textile industry.

1839 **Boss Dyer,** English, age 35, married. Has been boss dyer for 14 years in this country and England on all classes of woolen and cotton warp goods, such as satinets, cloakings, and shoddy, and is well up in dyeing light shades out of dark stock. Understands worsted piece dyeing, raw stock and worsted yarn. Steady and reliable, and best of references. Would work for fair pay.

1913 **Boss Dyer** or secondhand, who has had over 23 years' experience in large woolen mills in N. E., is open for a position. 44 years of age; married. Is familiar with cotton, woolen and worsted yarn dyeing for cassimeres, dress goods and trowserings; also piece dyes and raw stock. Best of references.

1908 **Boss Dyer and Bleacher.** Age 23; American; single. Now employed, but will change for good job. Best of references from present employers.

1894 **A Competent** cotton dyer, experienced on long chain, short chain, skein yarn, and raw stock, is open to a position. Age 48; Scotch; married. Will accept reasonable wages. Has good references.

1883 **A Boss Dyer** who understands cotton and wool raw stock dyeing, piece dyes, knit goods, and has had large experience on cotton skein yarns for the webbing trade, is open for a position. 38 years old; married, and an American. Will accept a reasonable salary.

1860 **A First-Class Boss Dyer** wants position. 50 years old; German; single. Has managed some large New England dye houses and is familiar with worsteds, woolens, mohairs, knit goods, pieces, yarns, slubbing, loose wool, carret yarns and cotton yarns. Will go anywhere and can give references that will satisfy anyone as to his ability.

1928 **Overseer of Dyeing,** 28 years of age, American, single, would like a position in a New England mill or in the Middle Atlantic States. Eight years' experience on woolens, shoddies, raw cotton and cotton yarns, piece dyed kerseys, beavers and carriage cloths. Good references from large Eastern mills. Salary moderate.

KNITTERS.

1925 **Boss Knitter** and sewing machine fixer, who thoroughly understands ribbed underwear, will be open to a position shortly. 35 years of age; American; single. Has given good satisfaction in large mills in New York state. Prefers Pennsylvania or New York State.

1926 **Boss Knitter.** 35 years of age, American, married, desires a position. 15 years' experience on underwear, astrakhans, stockinets, rubber linings, Jersey cloth, fleece linings, eiderdowns, etc. Good references from large knitting concerns where he was previously employed.

1906 **Supt. or Agent** of a hosiery mill is open to a position. Thoroughly understands spinning, dyeing and is familiar with all well-known makes of knitting machinery. American; 2+ years old; single. Has been superintendent for the last seven years in a large plant. Best of references.

1905 **Boss Knitter,** age 26 and married, with six years' experience on all kinds of Jersey ribbed knit ladies' underwear, would like to secure a position as foreman knitter in a small mill in Pennsylvania, or as assistant in a large one. Practical experience on Nye & Tredick, Stafford & Holt, McMichael & Wildman, Brinton and Champion rib machines; understands all kinds of sewing machines and repairs, also boilers and can run them on economical plan. Can do machine repairing in general, having had early training as machinist. Is strictly temperate, and can give references.

1831 **Boss Knitter** on circular latch needle machines, making ribbed underwear, or spring needle work made on Tompkins machine. Also a practical wool carder of about eight years' experience as overseer in underwear and shoddy mills. Understands raw stock and how to handle it so as to give best results. An American, steady and reliable. Age 36.

1554 **Boss Knitter.** Underwear, Jersey ribbed, lisle, wool, plaited work, silk Can handle any latch machine. Good references. Age 26; married.

1824 **Boss Knitter or Fixer** on ribbed underwear. Has worked on fancies, double knees and tops and plain work. Is familiar with Brinton & Denny, McMichael & Wildman, Huse and Pepper machinery Will work for $2.50 or more, according to position.

1776 **Boss Knitter.** Had constant experience in the knitting business for the past twenty years. Can handle any kind of goods made on a circular spring needle knitting machine. Age 36; American; married. Excellent references.

1920 **Supt. of Glove Factory** or knitting mill who understands the making of fabric gloves of silk, cotton, cashmere, and also knit gloves and mittens. 44 years of age; German; married, and has four workers in family, who understand glove sewing, pointing, etc. Has held responsible positions, and is a good manager. Can refer to some large establishments in New York and Chicago.

1939 **Boss Knitter.** Age 42; English descent; married. Has one girl who is a winder. 11 years as foreman knitter in one mill, and for the past seven years in full charge of knitting and winding in a mill, but wants to change on account of locality. Campbell & Clute, Tompkins and Crane machines. Balbriggan underwear, fleece lined and two-thread work, also fancies. Worked mostly on woolen goods.

MISCELLANEOUS.

1935 **First-class Twister** and Knitting. 25 years' practical experience wishes steady position in country place.

1489 **Boss Finisher,** Second hand or Boss Shearer. Well experienced; excellent references. English; age 27; single.

1835 **Beamer, Twister,** also understan s drawing in and splitting. Age 27; American. Has worked on ginghams, dress goods, shirtings and cotton worsted.

1851 **Machinist in Woolen Mill.** Can repair looms, cards, mules, etc., of every description, also worsted machine y. Understands forging tools and has fair knowledge of electricity. Ten years experience in some of the best mills in New England.

1873 **Wanted** situation as Master Mechanic in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's.

1895 **Shipping Clerk** and Bookkeeper, familiar with mill office work, would like to take a position as such in any part of United States. 21 years of age; single; an American. Best of references.

1865 **Machinist and Fixer.** Has had eight years' experience. 24 years old; English; single Is thoroughly familiar with Singer, Wheeler & Wilson, Merrow, Union Special, Lamb, Pepper, and Hepworth and Seattle loopers

1873 **Master Mechanic** in cotton corporation. Has had large experience. Middle aged; strictly temperate. A graduate of a technical school. Learned carpenter's trade and machinist's.

1866 **Overseer of Burling** and Sewing or Cloth Examiner in commission house. Have had 25 years' experience in the cloth room and can handle any class of woolens or worsteds, either dress goods or men's wear. 41 years old; Irish; married. Best of references. Have a son 19 years old who is a percher and brusher.

1914 **A Young Man** who thoroughly understands the keeping of mill books would like a position in the South rn States or would go to Cuba or Puerto Rico. Is a first-class man and perfectly familiar with general office work. An American; 22 years of age; single. Steady and reliable, and can give good references.

1910 **Loom Fixer** on Knowles, Crompton, Stafford, Whitin, Mason, Colvin and other looms, would like a position. Has made golf cloths, plaid backs, fancy dress goods, vicunas, kerseys, etc., also cotton lenos, lappets, novelties and plain goods. American; 38 years of age and single, steady and reliable, and can give satisfactory references.

1659 **Bleaching Overseer.** Seven years' experience as overseer, and has first-class references. Has handled all classes of work in the cotton piece goods line, from heavy shoeduck, drills, etc. down to cheesecloth, and bag goods, also all kinds of colored work, such as colored bordered handkerchiefs, colored striped shirtings, colored spots, also white and colored towels, linen crash, all kinds of cotton flannels, etc.

BOSS KNITTER WANTED

With wide experience in hose and half-hose with a large force of hands and automatic machinery. "K. Mill," care Textile World.

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PERFORATED COPPER
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Screens Especially for the Woolen Mills. . . . .
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The inventor is desirous of making arrangements with a first-class loom building or machinery concern, to buy outright or in part, his American Patent Rights. The Loom is now thoroughly tested, and is claimed to be more simple and easily mastered by loom-fixer and weaver than any automatic loom yet designed, and much cheaper to build. One weaver can attend three or four times present number of looms, and increase production for loom. Correspond with

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Large Assortment.

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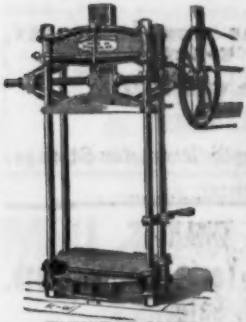

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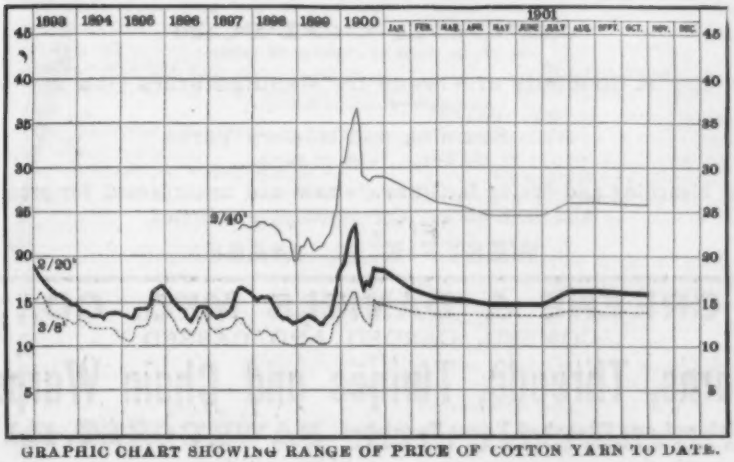

GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Eastern Cotton Yarn Market.

The recent scare news in regard to short crop of cotton and advance in same, induced Eastern spinners to hold stocks more firmly, and to discontinue cutting, which they have been doing for lots, out of stock.

Many spinners with list price of 16c. for 10s cones, sold 25 to 50 case lots at 15c., to 15½c. They also took small orders on higher numbers at say 20s at 17c. to 17½c., which means a basis of 15c. or lower for 10s. Higher numbers have been hammered down to extremely low prices on fair quality Southern cones.

Many mills have sold their 20s and 22s Southern yarn at about the same price at which other mills are selling 10s and 12s. This compelled various Eastern mills to make comparatively lower prices on finer numbers, than coarser counts, although, generally, it has been for lots out of stock.

Some of the Eastern mills, known as making distinctively Eastern yarn, are making two or three qualities, so their prices are somewhat confusing. The following is about the list spinners are getting for high grade Eastern mule yarn:

10s	15½ to 16
14s	16½ to 17
16s	17 to 17½
18s	17½ to 17¾
20s	17¾ to 18¼
22s	18¼ to 18¾
40s	25

Egyptian yarn, 4c. to 5c. above white.
Combed yarn, 5c. to 6c. above carded.

Philadelphia Cotton Yarn Market.

The recent sharp advance in cotton induced many spinners to insist on an advance in yarn. This advance induced quite a good many offers of orders, and some orders of considerable size were placed, at not much of an advance, if any, however, as sales were evidently based mostly on stock.

We believe, however, the warehouse stocks have been very much diminished. We know some people, doing a very large business on hosiery yarn, especially Southern yarns, who without taking any large orders, diminished their stock the past month, from 200 to 500 cases, leaving the amount on hand, less than normal.

Some commission agents have tried to stand firmly on 20s cones, Southern frame yarn, at 16c. While some small business has been done at this price, some fair orders have been placed with other mills who were willing to take 15c. to 15½c. We note some orders on 18s cones at 14½ to 15c., 16s at 14½c.

There are several mills both in this State and New York, who have several hundred cases yarn on hand, which they have taken in, at extremely low prices, but the spinners of these yarns now want 2c. advance for orders ahead.

Our quotations cannot be made very exact, as many qualities are made in the South. Some mills are using better stock than others and some mills are putting waste in their yarn, to cheapen it in various ways.

W. Warren Thread Works,

SPOOL COTTON
on 100 to 12,000 yd. Spools or Tubes.

A Specialty of Thread for Manufacturers Use
on Spools, Tubes or Bobbins.

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on Cones, Tubes or Skein.

Our bleaching and dyeing facilities are new and unsurpassed for prompt and neat work. Correspondence solicited.

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GREENE & DANIELS MFG. CO.,

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Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

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HOSIERY AND UNDERWEAR YARNS,
Peeler, Bleached, Egyptian or any colors desired. Also,

FINISHERS AND BLEACHERS
of piece goods, underwear, towels, yarns, etc.

THE ONLY USERS OF JACKSON'S FORMULA OXIDIZED BLACK FOR HOSIERY.

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COTTON WARPS AND YARNS
In gray and all colors, single or in any twist.

NOVELTY YARNS
In Cotton, Mercerized Cotton, Silk and Worsted, in various Patterns, Colors and Twists.

We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.

Carded and Colored Cotton for Mixing With Wool

Machined, or in Roving.

We are advised that several of the large spinning mills heretofore on hosiery yarn having become disgusted with the yarn trade, have ordered looms, and will make cloth. They are running now, probably less than one-third of their product of a year ago. The effect of new spindles has been largely offset by the stoppage of old ones and decreased time.

The following quotations are for about an average quality:

Southern Frame Cones.

6s to 8s	13
10s	13½ to 14
11s and 12s	14 to 14½
14s	14½ to 14¾
16s	14½ to 14¾
18s	14¾ to 15
20s	15 to 16
22s	15½ to 16
24s	16 to 17
26s	16½ to 17
30s	17½ to 18½
40s	24
50s	30 to 31

Warps.

14s to 16s	14 to 14½
20s	14½
22s	14¾ to 15
26s	15 to 15½
14/2	14 to 14½
16/2	14½
20/2	14½ to 15
24/2	16 to 16½
30/2	17½
40/2	22 to 22

Skein.

4s to 6s soft	12½ to 13
10s to 12s	13 to 13½
14s to 20s	13½ to 14½
22/1	14½
14/2	13½ to 14
16/2	14
20/2	14½
30/2	17½
40/2	21 to 22

Woolen Yarn.

Spinners of woolen yarn continue busy, but on certain lines of trade there is beginning to appear a slowing up of orders. The knitters using backing for underwear are completing orders and must shortly discontinue in order to start on cotton garments.

The overcoating trade is slacking up, and but few orders are coming from this source. The rubber trade continues buying cheap yarn and there is much 2-ply yarn being sold for the knitting of gloves, sweaters, and other articles of this description; this will continue for a considerable time.

There is an active demand on the part of hosiery manufacturers whose orders have been given very late. The demand is for woolen as well as merino yarn, and will last well after January. Eiderdown knitters, whose trade has been backward, are now ordering yarn freely.

The French flannel yarns are selling well and woolen fancy colored yarns for dress goods are being largely sold. Some of the spinners have all the business,

New England Cotton Yarn Co.

NEW BEDFORD, MASS.

JAMES E. STANTON, Jr., Agent.

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Mule Spun Hosiery Yarns, Carded and Combed.

Colored Yarns, Solid, Mixes and Randoms.

Spinners of Cotton Yarn

Frame Yarns, Single and Twisted, Carded—Combed—Bleached

Fine Yarns, For Electrical Purposes

All Numbers 4 to 200.

From **American Peelers, Sea Island, Peruvian and Egyptian Cotton.**

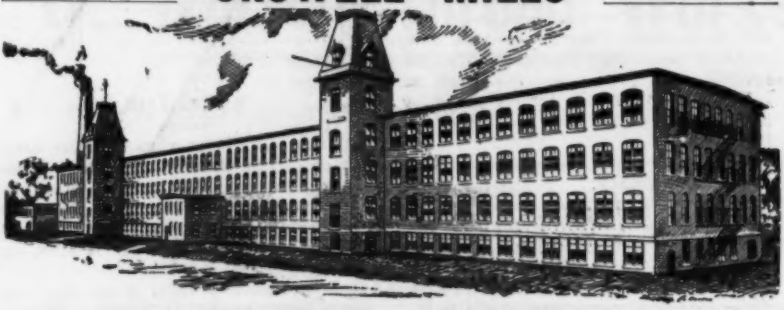
BENNETT, HOWLAND, ROTCH, N. B. SPINNING, COHANNET, NEMASKET, GLOBE, SANFORD, } **650,000 Spindles.**

Entire product sold direct to consumers through the Company's own offices.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.



COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER.

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Over 20,000 of our HUMIDIFIERS in operation.

Highest award on the Recommendation of The FRANKLIN INSTITUTE for

"SIMPLICITY and ORIGINALITY of DESIGN"

DANA WARP MILLS

Westbrook, Maine.

WHITE AND COLORED WARPS,

6s to 50s—Single and Ply.

MULE COPS,

from 30s to 50s from

AMERICAN AND EGYPTIAN COTTON.

The J. R. MONTGOMERY CO.,

WINDSOR LOCKS, CONN.

Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL, WORSTED, MOHAIR AND SILK.

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

while others are slowing down, being entirely without orders. The outlook is satisfactory, but a most peculiar one. Some knitters state that they are very busy and that of course at this time they should be busy; others state that the trade is late and if jobbers did not place orders soon they would be unable to get orders out.

Again there are those who state that they would be on the market for material in December or as soon as they found out just what turn the market for underwear would take; others say that one week they would be busy running until 9 o'clock nights, and the next week would find them slowed down to almost a standstill.

So far as can be observed, the mills manufacturing a fine line of fabrics seem to be getting the orders, and especially those whose garments are well established on the market; it is a well-known fact that a mill's reputation is what sells the better class of material. The mills making the cheaper grades are not getting the business this time.

The knitters are getting ready to use large quantities of Australian thread waste and some orders have been already placed. The majority will not place orders before November or December. The prices this article sells at, range from 55 to 62 cents per pound. The market has advanced from 1 to 2 cents per pound during the last week.

There are several new mills putting in garnett machines to take care of this line of goods. For one year and a half this knitting industry has been buffeted by all manner of adversity. The change for the better is at hand with an advance in wool and yarn as soon as active buying takes place.

Hat manufacturers will end their season in about three or four weeks, and will not start again before February or March. They have been using large quantities of wool and will next season be large purchasers of Australian noils.

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
310 Church St., New York.
306 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mills, Oneida Co., - N. Y.

JAMES E. MITCHELL & CO.,
COMMISSION MERCHANTS.
COTTON YARNS
For All Purposes.
123 & 124 Chestnut St., PHILADELPHIA. 74-76-78 Summer St., BOSTON.
SOLE AGENTS FOR
Lawton Spinning Co., - Providence, R. I.

TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON **WARPS**
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40s and above. AND
FITCHBURG, MASS. **WARPS**

COTTON, WORSTED, WOOLEN, MERINO AND FRENCH SPUN YARNS
Mercerized Cotton a Specialty
Write for Samples.
E. A. MORGAN,
54-66 Franklin St., N. Y. City

Incorporated 1899.

AMERICAN COTTON YARN EXCHANGE

AMERICAN
Cotton Yarn Exchange
COMBED AND CARDED COTTON YARNS
From Northern and Southern Mills.
American, Egyptian, Peruvian and Sea Islands.
ARNOLD B. SANFORD, Pres. and Gen. Mgr.
OFFICES: 67 Chauncy St., Boston.
240 Chestnut St., Philadelphia.
43 Leonard St., New York City.

Long Distance Telephone, Boston 1100.

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:
Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
927 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co.,
MANFRS. OF
ALL NUMBERS SINGLE AND TWO-PLY,

Worsted YARNS,
Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes.
Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns only.

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

FRENCH SYSTEM. BRADFORD SYSTEM

B. F. BOYER CO.,

MANUFACTURERS OF

Worsted and Woolen Yarns

OFFICE AND MILL: Delaware and Cooper Streets. CAMDEN, N. J.

Albert Herbst & Co.,

EMERALD WORSTED MILLS,
East Allegheny Avenue,
Emerald and Wishart Sts.,
PHILADELPHIA, - PA.

MANUFACTURERS OF

Worsted Yarns

FOR KNITTING AND WEAVING.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

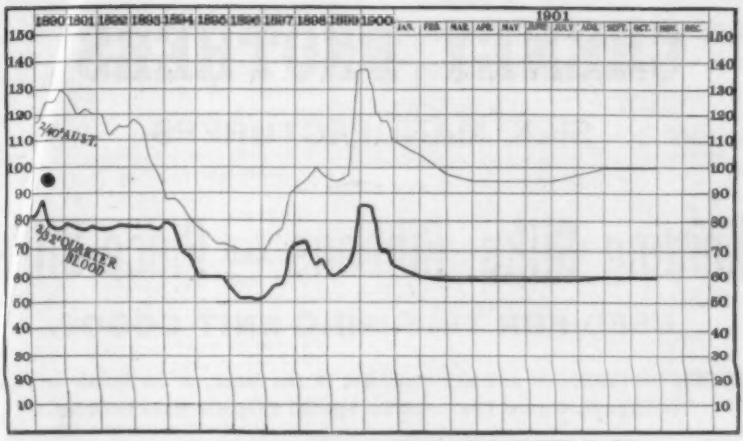


CHART SHOWING RANGES OF PRICE OF WORSTED YARN.

In connection with the noil question it may be said that manufacturers are using more of them, but the supply is diminishing each day. The woolen combine, having a number of combing mills, are using their own noils and have none to offer, and a number of combers have gone out of business, so that the scarcity will continue rather than abate.

Manufacturers buying scoured wools, noils, thread waste, etc., seem to be holding out of the market until after the first of the year, as they are all fearful of carrying stocks over into a new year.

The yarn spinners have had a good run during the last year and are looking for a better run next year, and believe that from time to time orders will materialize which will keep them going until the first of the year, when the heavy weight business will start in again.

The weavers will be soon buying woolen yarn to put in the backing of heavy weight cloth. Orders will be placed on these yarns in November and December.

Worsted Yarn.

Worsted yarn spinners are busy and there is undoubtedly a scarcity of yarn. All the spinners are sold up until the

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

MOHAIR
PLUSH AND BRAID YARNS
QUEENSBURY MILLS,
WORCESTER, MASS.
CAMELS HAIR, LUSTRE, COLORED MIXTURES, AND LOOP YARNS FOR DRESS GOODS.
FLYER SPUN and SINGLE WEAVING YARNS.
H. HODGSON, PRES. and TREAS FRED HODGSON, SUPT.

CHENEY BROTHERS,

SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut St., PHILADELPHIA.
79 Chauncy Street, BOSTON.
186 Franklin Street, CHICAGO.

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

Buckingham, Paulson & Co.,
COMMISSION MERCHANTS.
COTTON YARNS of all Descriptions.
83 Leonard St., New York.
120 Chestnut Street, Phila. 330 5th Ave., Chicago. Ills
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

Eddy & Street,
COTTON, WOOLEN, YARNS AND BRAIDS WORSTED, SPUN SILK.
PROVIDENCE, R. I.

DAN'L MASON,
Voorhis Mills, PATERSON, N. J.
BUYS JOB LOTS in colored and raw SILK YARNS.
Cash Advances on Sales and Prompt Returns.

RICHARD CAMPION,
Selling Agent for—
Bristol Worsted Mills,
Highland Worsted Mills.
17 Bank Street, Philadelphia, Pa.

COTTON YARNS

from 2s to 26s single and ply.
SPECIALTY—FIRE HOSE CORD and YARNS put up on tubes wound on Universal System.
WHITTIER MILLS, - - - - - SPRINGFIELD, MASS.

first of the year. These orders being now delivered were placed in July.

It is believed that about the middle of November further and larger orders will be placed, which will carry the spinners well into next year. Duplicate orders for worsted yarn were placed generally at old prices, but spinners stated that later in the year they, the weavers, must be prepared to pay an advance.

Had it not been for the late boom, whose phenomenal advance checked the use of worsted yarn, the present state of affairs would undoubtedly have called for an advance of at least 5 cents per pound. As it is, some of the leading spinners state that they have secured all the orders they care to take at the present prices.

The boom, however, taught the spinners the difference between a paper profit and a fair business, and they are fearful of advancing the price of yarn beyond the price which weavers can afford to pay, and hence are willing to keep their machinery running at a fair profit. At the present time yarn cannot be said to have advanced.

Some of the weavers who last month were predicting that there would be a cessation of orders for the spinners are at this writing scouring the market trying to buy yarn at most any price, but without success. They have been from spinner to spinner and have been unable to get orders booked.

The principal yarns selling are those going into piece dye worsteds, and range not higher in quality than a half blood and as low as a low quarter-blood.

J. BROADBENT & SONS,
Woolen Yarns
for Knitting and Weaving, al o Wool Spun Cotton Yarns. Equipment first class, practical experience, small expenses, and low prices. Will take work on commission.
UNIONVILLE, CONN.

WOOLEN AND MERINO YARNS,
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL,
Leominster, Mass.

TRY OUR
Silkine also Lisle Silk
FINISH
For Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

J. S. DODDS,
517 Wool Exchange, New York, N. Y
MERCERIZED YARNS
Two and Three Ply, for All Purposes,
In Peeler, Egyptian and Sea Island, gassed and ungassed, natural and dyed. Fast Black for cross dyeing a specialty.
Through H. A. CAESAR & CO.

EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

A. D. SALKELD & BRO.
With
FRED'K VIETOR & ACHELIS.
YARNS,
66-72 LEONARD ST., NEW YORK.

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns, Double and Twist Yarns for the Weaving Trade.
PAWTUCKET, - R. I.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, - R. I.

LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
Philadelphia.

FOR SALE.

White Card Strips
Sea Island Strips
White and Colored Oily Card
White and Mixed Colored Soiled Card
Peeler, Sea Island, and Egyptian Comber.

SAMPLES ON APPLICATION.

CHAS. W. BECKER, Agt.,
Maker of Cotton and Wool Shoddies. **Amsterdam. N. Y.**

Not connected with any "Trust" or "Combination."
MAIL SAMPLES FOR QUOTATIONS.
Secure our prices on bobbins with metal shields of all kinds.

CHARLES O. MURRAY,
.....NASHUA, N. H.
Manufacturer of **Spools, Bobbins, Skewers, Shuttles,** and Wood Turning, of everydes criptiion.

SHODDY WM. H. H. SLACK & BRO. Springfield, Vt.
Carbonized Stock A Specialty. **FLOCKS**

Get the Best! It Pays. Picker Sticks made of second growth North Carolina Hickory, thoroughly seasoned, are the best. We make them. Mail us a sample stick and get our prices. Orders filled promptly.
THE SOUTHERN BOBBIN CO., - - Greensboro, N. C.

SAVOGRAN CLEANS WOOL, FLOORS ANYTHING.
INDIA ALKALI WORKS, Boston.

Some of the mills which predicted a large business on a fine class of goods are finding that they are unable to procure orders for that particular kind. Fine fancy worsteds in light weights have received but moderate attention from buyers. Weavers running their mills on this class of goods are receiving but little encouragement, and while later there will be a good business on light weight worsteds, the jobber is not taking chances of carrying stock over until another season, and will not therefore purchase fine fancy worsteds until they themselves have secured the orders from customers.

We know one manufacturer who once stated he was building a mill to manufacture a Clay worsted out of 2/60s Australian warp and filling. He stated that his commission man had just been to see him and would undoubtedly sell the production of the mill within 10 days. We saw this manufacturer last week and he stated that he had secured no orders for his cloth, and that he had some yarn contracts which he wished to cancel. This shows that the finer grades of cloth are not in great demand.

Weavers who have established their lines of worsted cheviots, serges and Clay worsteds are securing all the business and are running their mills overtime to fill orders. Dress goods manufacturers are having a splendid business and are using large quantities of yarn.

The knitters of different kinds of sweaters, gloves and hats are having an exceptional run at this time, and are experiencing great difficulties in getting yarn. This state of affairs is holding up production. Business with them is fully two months late, as the manufacturers who have no dyeing facilities would not order yarn until he secured orders for his goods.

Top manufacturers are especially busy. They are running mostly tops which range from a half-blood to a quarter-blood quality and have orders which will carry them well into March of next year.

The spinners of French spun yarn are not so fortunate in securing orders, and, although the French spun yarn spinners are busy, it is from the weavers they are securing their orders, as the knitters of hosiery and underwear have been unable to place orders to any extent. This class of trade is very backward and the knitters in consequence not having the business and, not knowing what grades of yarn or what sizes of yarn to order, have been but poor customers for the spinners. This state of affairs is liable to change at any time and when the change does come the knitters must be prepared to pay advanced prices for yarn.

We quote as follows:

2/40s Australian	95 to 1.05
2/40 delaine	85 to 90
2/40 half blood	80 to 85
2/30 ¼ to ⅜	56 to 62½
1/40s half blood French spun..	75
1/30s half blood French spun..	70

SHODDY, WASTE AND RAG MARKET.

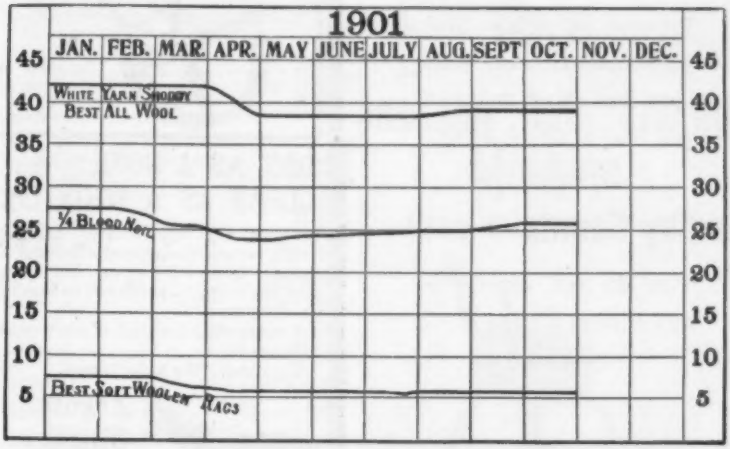


CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

Rag and Shoddy Market.

Manufacturers are still nibbling, as it were, on the edges of the shoddy market, the resultant being many sample orders, which in the aggregate amount to a very small volume of business. This may in some quarters lead to a more flourishing state of affairs, but the majority of dealers have about decided that there will be very little for them in this season's trade. Very little change in prices has been noted since last month, and the lines receiving the greater amount of attention are the same as at that time.

NOILS AND WOOL WASTE.

Our quotations on noils remain unchanged from those of a month ago. The market shows a healthy condition and business is readily obtainable. In fact, in a number of instances, it has been difficult to buy good ⅜ at our lower figure. A certain amount of restriction in selection is still in evidence, but is being gradually remedied as the worsted mills produce more yarn. Even this larger production of noil has not as yet affected the market and at this writing shows no tendency to do so.

Wool wastes are quiet and no movement of any account is anticipated for the near future.

RAG MARKET.

The past month has seen little change in the rag situation. Soft woolen is the only stock in a very steady market to have been slightly off. What little call there is has been for a fair grade of stock, the lower grades receiving very little attention. Dealers, however, at this time of year expect to see lower prices quoted than at any other and are willing to wait, feeling satisfied that business will be done on a more satisfactory margin when trade starts. Rock bottom was reached some weeks ago as the steadiness of the market continues to prove; the change when it comes will, therefore, be for the better. If speculation here were not a thing of the past, six months' investments at the present time would be the order of the day.

SHODDIES AND EXTRACTS.

White yarn, best all wool	38-40
White knit, all wool, best, fine	28-32
White knit, No. 2	24-28
Light yarn, extra fine	25-28
New pure indigo blue	23-25
Fine worsted, new black	24-24
New blue clip, best, fine	20-22
Dark mixed yarn, extra fine	22-24
All wool yarn, medium and coarse grades	18-20
Merino.	
Fine light, all wool, No. 1	24-25
Medium light, all wool, No. 1	16½-17½
Medium light, all wool, No. 2	14-16

Prevents slipping and puts new life into an old belt that you thought you had to throw away.

Quality Counts

You do not expect to buy Silk at Calico prices.

Stephenson Dressing

is a little higher in price than some—but it wears well; gives good

Satisfaction.

You get your money's worth and in time you

Come Back For More.

Quality Counts.

STEPHENSON MFG. CO.,

ALBANY, N. Y.

PHILADELPHIA: 123 N. 4th St.
NEW YORK CITY: 204 Fulton St.
CHICAGO: 11 S. Canal St.

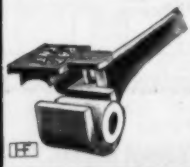
Write us for Free Sample.

DRY AS A BONE; CLEAN AS A WHISTLE.

That's the way worsted spinning frames run when equipped with ARGUTO OILLESS TENSION SADDLES. No trouble with lint or fly, no accidents, no heating, no oil-spots.

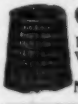
Seventy-eight per cent. of the worsted mills use them.

Try them. We make it easy.



Arguto Oilless Bearing Co.
Wayne Junction, PHILADELPHIA.

SHEARS for finishing Cotton, Wool or Worsted Fabrics made in single sets or in several sets to finish face and back at one feed, saving space, time, cost. The Combined Shear and Roller for Carpets is an example. Baling and Finishing Presses. Presses for Straw, Felt and Buckram Hats. Shafting, Gearing. We grind or repair all makes of Shears. GEO. C. HOWARD, Lansdowne, Delaware Co., Pa.



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Best in the World. Send for Catalogue.
Write for delivered prices, **H. F. LEWIS & CO., Ltd.**
NEW ORLEANS, LA. 316 Baronn est.

NEW PROCESS PINIONS
ARE LARGELY USED IN UP TO DATE MACHINE SHOPS AND FACTORIES BECAUSE THEY
ARE NOISELESS
THE NEW PROCESS RAW HIDE CO.
SYRACUSE
N.Y.

Fine black, all wool	18-20
Fine dark, all wool, No. 1	17-18
Medium dark, all wool, No 1	12-13
Medium dark, all wool, No 2	11-12
Red knit stock, strictly all wool	19-20
Red flannel, all wool	18-20
Dark blue for hosiery, strictly all wool, No. 1	17-20
Dark blue for hosiery, not all wool, No. 2,	12-14

DELAINE EXTRACTS.

Light	17-19
Medium light	15-17
Regular grey	12-13
Black	13-15
Fancy colors	16-20

WOOLEN RAGS.

Fine merchant tailors, all colors	8-9
Choice light colors	12-14
Browns	12-13
Blacks	9-10
Fine blues, plain	10-11
Fine dark	10-11
Medium dark	6½-7½
Worsteds.	
Blue	15½-16½
Black	18-20
Serges.	
New blue	14-15
New black	14-16
Flannels.	
New scarlet	17½-18½
New blue	15-16
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	6-6½
Old white flannels	17-18
White flannels, No. 2	11-12
Old red flannels	8½-9
Light blue flannels	7½-8½
Old blue flannels	6½-7
Old plaids	5-7
White stockings	17-18
White hood stock	21-22
Clear hoods	8-9
Red Stockings	8-9
Blue stockings	7-9
Fancy stockings, No. 1	7-9
Grey stockings	8-9
Black stockings	8-9½
Knit stock comforters	7½-8½
Red knit	8½-9
Light grey knit	7½-8
New light fancies	14-15
New fancies	11-12
Merinos.	
Light, fine	12-14
Light, coarse	7-7½
Fine dark	8-9
Dark, No 2	5-6½
Coarse dark	4-5
Blue	10-11
Blue—seamed	12-14
Black—unseamed	9-10
New black	18-20
Small	2-3
Bunting	6-8

NOILS.

Australian	48-55
Fine domestic	40-45
⅛ Blood	35-40
⅛ "	29-32
⅛ "	25-27
Braid	22-25
Carpet (white)	14-18
Carpet (colored)	10-12½
Seedy.	
⅛ Blood	25-30
⅛ "	20-25
⅛ "	17-22

FLOCKS.

Shear, fine white, all wool	13-15
Fine indigo blue, all wool	9-9½
Fine black, and blue, all wool	7½-8
Fine dark, all wool	6-6½
Gig, fine, all wool	3-4
No. 1, black, all wool cut	5-6
All wool, fancy, shear and gig	2½-3½

THE

American Woolen Co.'s

many mills are using the

Jackson Belt Lacing Machine

Why Cannot You?

An indispensable adjunct to every factory in which belting is used. The cost of lacing one-quarter that of old methods. Lacing lasts three times as long. One cent laces a 5-inch belt. Three minutes to lace a 6-inch belt.

REFERENCES.

Putnam Woolen Co., Putnam, Ct.
Slater Woolen Co., Webster, Mass.
Worcester Bleach & Dye Works, Worcester, Mass.
Thun & Jansen, Reading, Pa.
Mt. Vernon-Woodbury Cotton Duck Co., Baltimore, Md.
Blood Knitting Co., Amsterdam, N. Y.
Calumet Woolen Co., Uxbridge, Mass., and many other Textile Mills.

Awarded the Silver Medal at the Pan-American Exposition, the highest award given for Belt Lacing Machines.

Ask for Catalogue No. 13.

DIAMOND DRILL & MACHINE CO.,

Walnut St., Birdsboro, Pa.

Domestic Agents: John F. Orth, Reading, Pa. and 199 Washington St., New York City; J. E. Cincinnati, O. and Henshaw, Buckley & Co., San Francisco, Cal.
Rhodes, Philadelphia, Pa.; E. A. Kinsey Co.,
Foreign Agents: Selig Sonnenthal & Co., London, Eng.; New York Export & Import Co., New York City, N. Y., and The Jackson Belt Lacing Co., Toronto, Canada.

FIRTH & FOSTER CO.,

Dyers and Finishers of

Dress Goods, Men's Wear and Cloakings, such as Venetians, Armures, Soleils, Crepons, also Silk Warp Fabrics, Cotton Warp Linings, Suitings, Clays, Serges, Worsted Damasks, Tapestries and Shirtings.

Particular attention given to fast colors on cotton and worsted yarns, slubbing and stock dying.

Special black for the silk trade on fine cotton yarns.

MAIN OFFICE AND WORKS:
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NEW YORK OFFICE: Silk Exchange, 487 Broadway.

FRANKLIN BLEACHING
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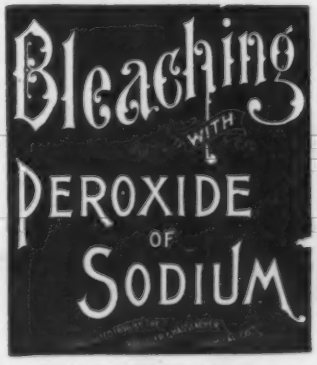

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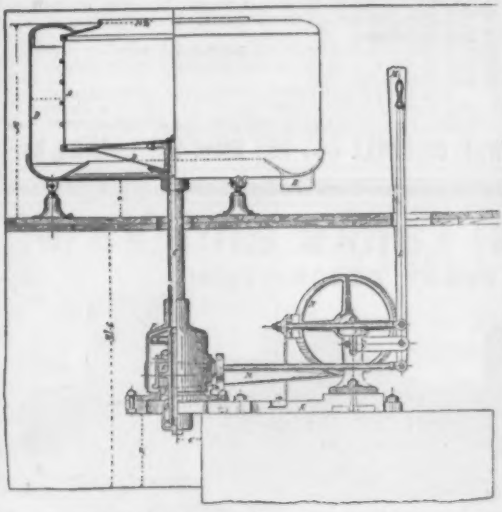

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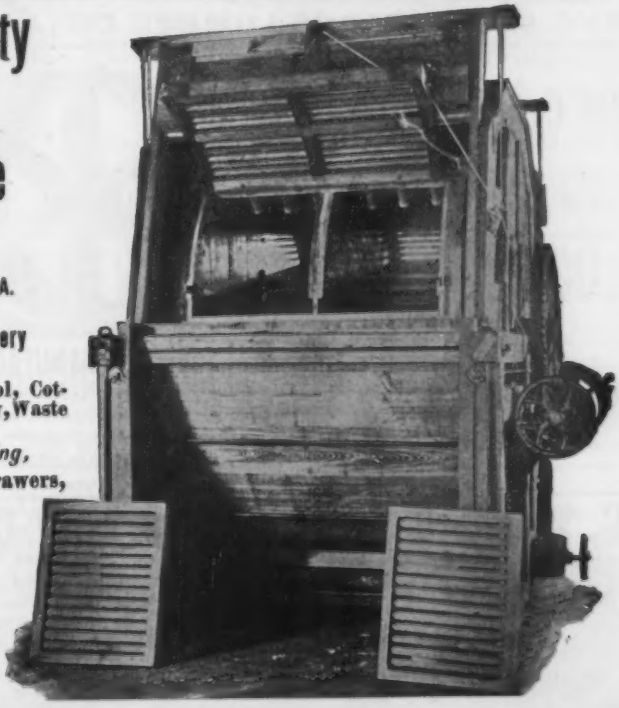

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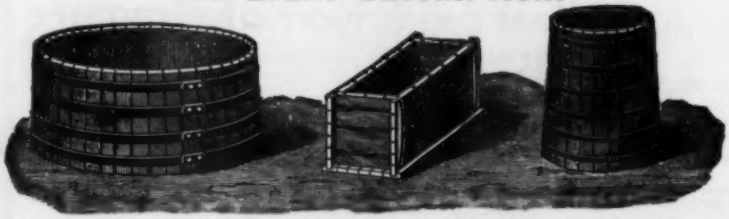

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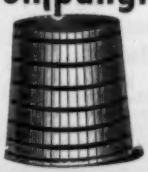

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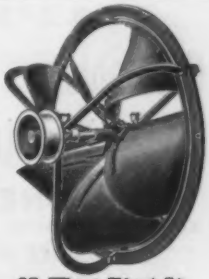

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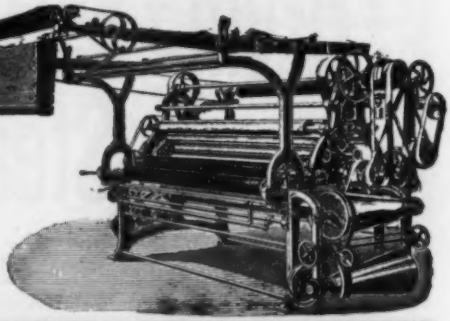

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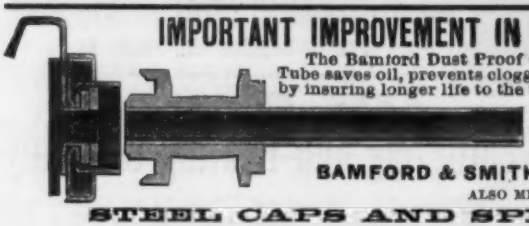

IMPORTANT IMPROVEMENT IN WORSTED SPINNING.

The Bamford Dust Proof and Self-Lubricating Spindle Tube saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, **and most important of all,** makes PERFECT YARN. Refer to largest worsted mills.

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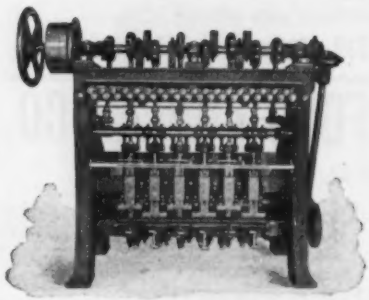
ALSO MFRS. OF

STEEL CAPS AND SPINDLES.

CAPS, FLYERS, TUBES, Etc., REPAIRED.



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L. F. FALES,

Manufacturer and Builder of

Multiple Needle Sewing Machines

For Sewing Carpet Linings, Horse Blankets, Wadding, etc.

These machines can be built with any required number of needles.

SPECIAL MACHINERY DESIGNED AND BUILT.

Telephone Connection.

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THE TORRANCE MANUFACTURING CO.

Sole Makers of the TORRANCE PATENT

Self-Acting Balling Machine

The attention of Woolen Manufacturers is invited to these Machines as convenient labor-saving appliances. The machine can be adjusted to make any size balls to suit lots, and the creel is constructed to carry twice the number of spools used by the old system.

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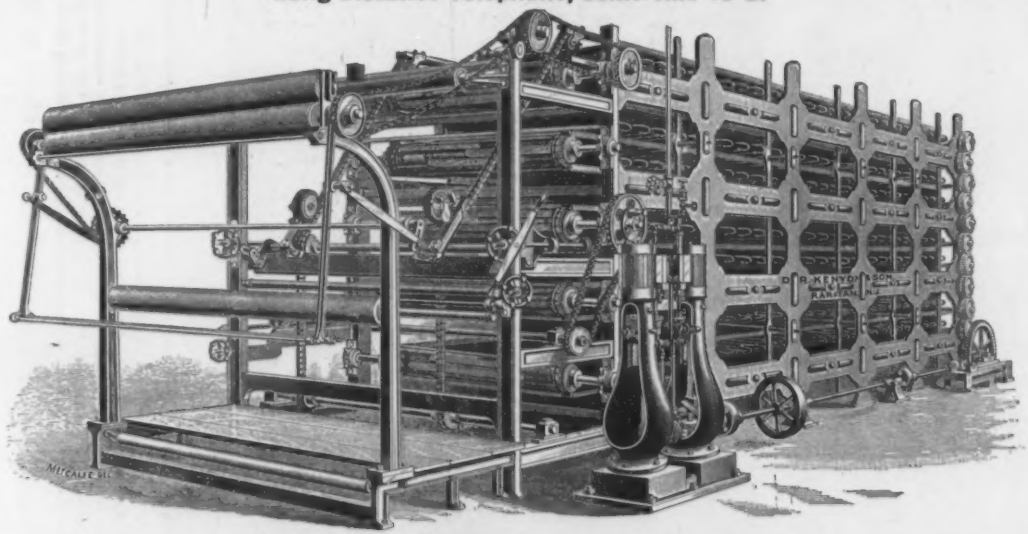
TENTERING AND DRYING MACHINES,

WITH LOW DOWN FEED.

Patented Feb. 26, 1895.

Long Distance Telephone, Somerville 40-B.

Hot Air Drying and Tentering Machines.



Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods.

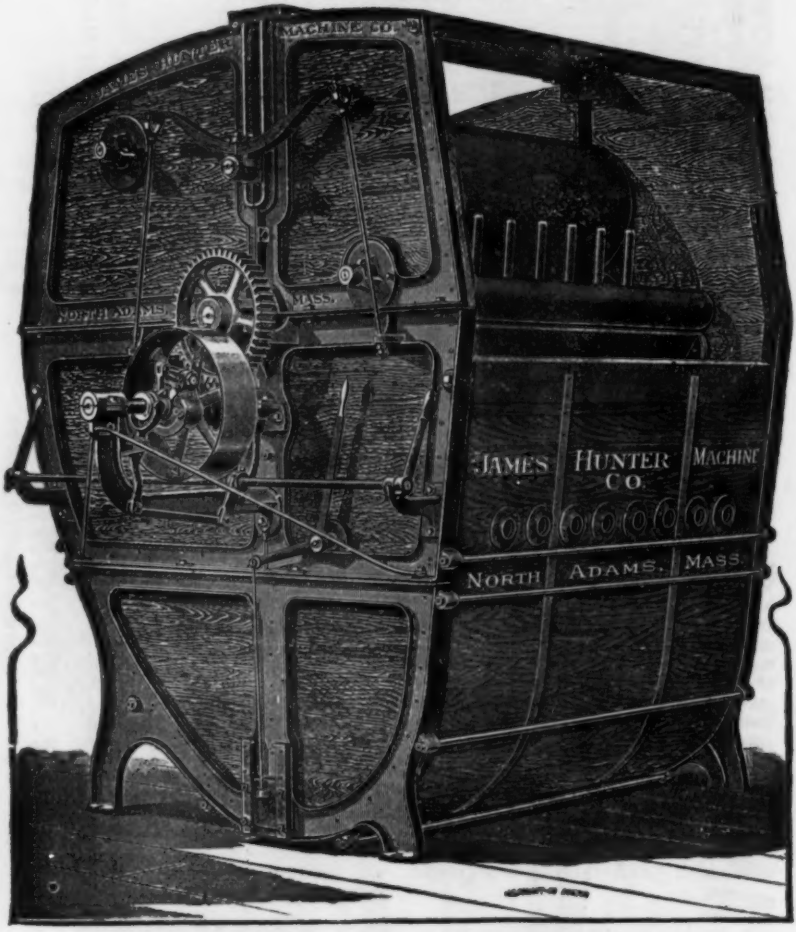
Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs (double or single,) Dewing Machines, etc.

Manufactured by D. R. KENYON & SON, Raritan, N. J.

Successors to KENYON BROS.

HUNTER'S IMPROVED CLOTH WASHER

For Four, Six and Eight Strings of Goods.



Power transmitted by means of a Friction Pulley.
No Shifting of Belt to start and stop the machine.
Less power required than for any other Washer of equal capacity.
All Main Bearings are adjustable. All Bearings are on the outside of frames.
No dripping of Oil on the Goods, or in the Wash Box.

Also Combination Washer and Fuller for Knit Goods in the String.

Write for further particulars and prices

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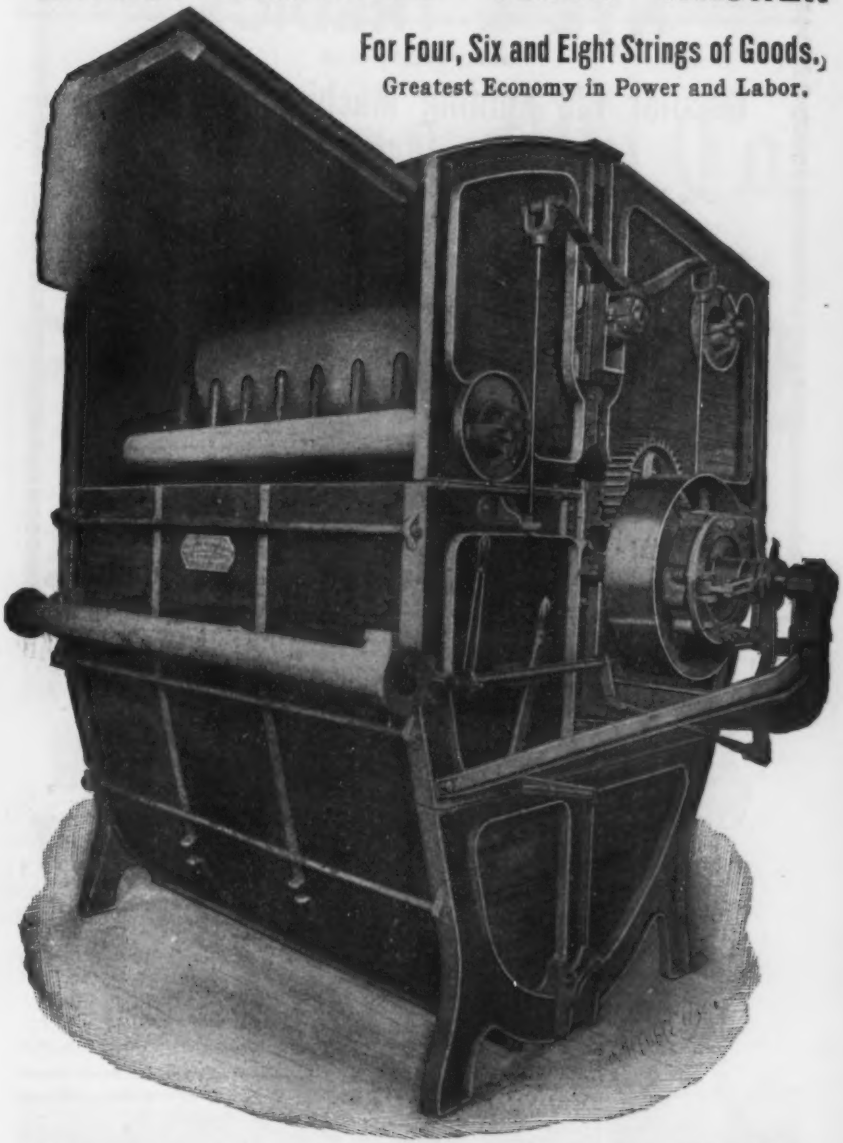
Long Distance Telephone, 2954.

LATEST IMPROVED CLOTH WASHER

For Four, Six and Eight Strings of Goods.

Greatest Economy in Power and Labor.



Unequaled for Capacity and Rapid Washing

All Kinds of Heavy and Light Goods are Desired.

Attachment for Washing and Fulling Knit Goods in the String.

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Circular Rib Knitting Machinery,
Underwear Machinery,

For Ladies' Vests, Combination Suits, Corset Covers, etc.
Men's Underwear, Sweaters, etc.

New Improved Sleeve Machines.
Machines for Rib Hosiery, Rib Tops and Cuffs.

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MECHANICAL STOP MOTIONS
FOR CIRCULAR RIB KNITTING MACHINES.

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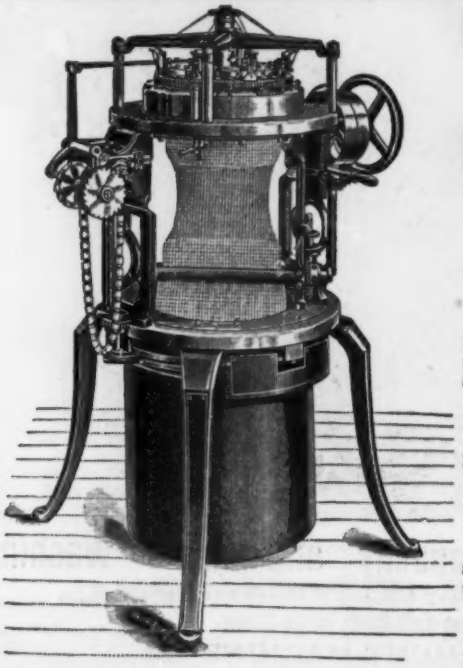

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RIB KNITTING MACHINERY,

AUTOMATIC AND PLAIN,

For all classes of Ribbed Hosiery and Underwear, Combination Suits Sweaters, etc.

ESTABLISHED REPUTATION FOR

Largest Production. Best Quality Fabric, Durability, Economy of Operation.

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THE

Friedberger Mfg. Co.

WHOSE

FALL LINE, 1902

IS NOW READY FOR DELIVERY,

Again desire to inform the trade generally that all

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MILLS AT

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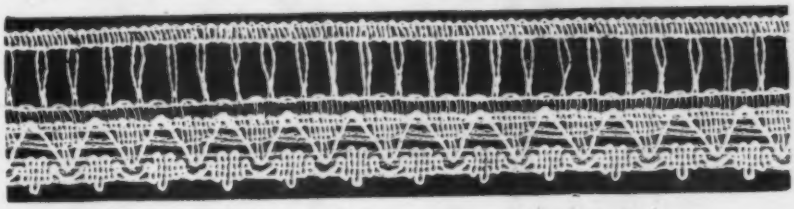
Correspondence Solicited.



THE INVINCIBLE, "C,"
FULL AUTOMATIC KNITTING MACHINE

For SEAMLESS Hosiery

A BIG PRODUCER.

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PRACTICAL AND ECONOMICAL IN OPERATION.

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NO EXPERIENCE REQUIRED TO TRANSFER RIBBED TOPS BY THE INVINCIBLE METHOD.

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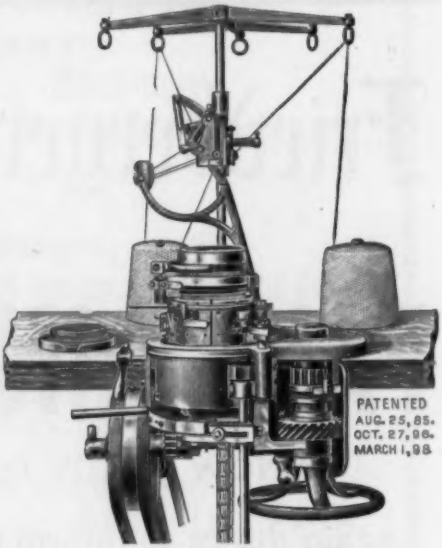
A MACHINE OF THE HIGHEST GRADE.

Write for Catalogue.



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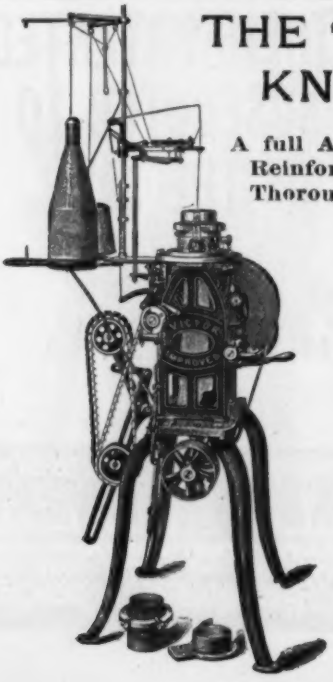

THE "NEW" VICTOR KNITTING MACHINE

A full Automatic Seamless Hosiery Machine. Reinforcing Thread Automatically Inserted. Thoroughly Interchangeable in all its parts.

More simply constructed than any Machine on the market.

Automatic Two-color Striping Attachment, also, Black-Leg White-Foot Attachment.

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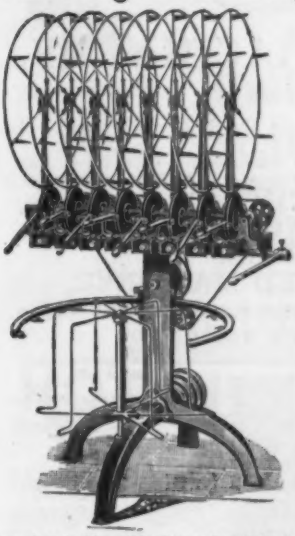
JAMES TAYLOR,

Knitting Machinery for Hosiery and Underwear



Back-winding Machine for winding the yarn from imperfect pieces back into skeins.

New and Second Hand.

SPECIALTIES IN NEW.

Sole Selling Agent for Stafford & Holt.

UNEXCELLED MACHINERY FOR RIBBED UNDERWEAR,

Sweaters, Bathing Suits, Toques and Specialties, with or without Automatic Stripers and Designers.

These machines have the **only absolutely perfect Take-up Device** Depends neither on springs, friction, ratchet, nor state of weather for its efficiency.

Builder of the **ONLY BACK-WINDING MACHINE** in the market. Ravels and backwinds all classes of Knit-Goods, including plated work and fabric made on 8-feed plain or tuck machines.

All inquiries and orders relating to the above machines should be addressed direct to me.

LARGE STOCK IN SECOND HAND.

Everything pertaining to the manufacture of all classes of Knit Goods, for example: Machines for Ribbed and Flat Underwear, Hosiery, Sweaters, Jackets, Mittens, Gloves, Borders, Facing, and Gas Mantles, Buttonhole and Button sewing Machines, Concealed Stitch Welters and Trimmers, Union Specials, Steam Presses, Winders, Ribbers, Sleevers, Loopers, Whizzers, Stop-motions, Cylinders and Dials, Needles, Pins in bulk, Brass Stamps, Stamping Ink,—in short, write us if you are in need of anything, or if you have any Machines for sale.

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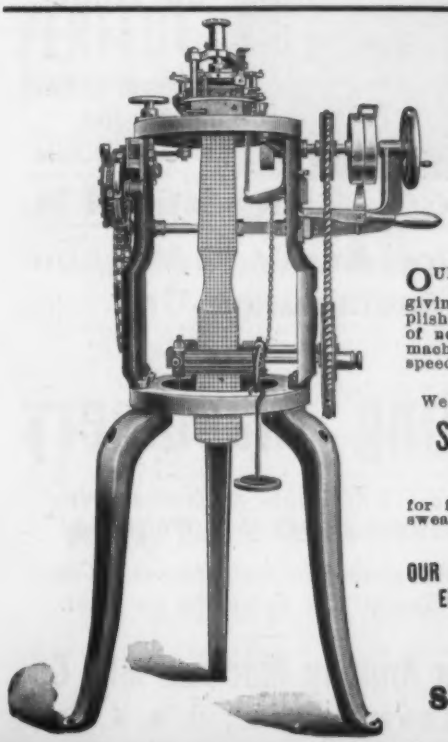

HIGH SPEED RIB KNITTING MACHINERY.

OUR latest model machinery has been designed to run at **very high speed** giving large production. This is accomplished with fewer seconds, less breakage of needless, less jar and wear and tear on machines than has been customary at lower speeds.

We also make special...

STRIPING AND DESIGNING MACHINES

for fancy golf stockings, bathing suits, sweaters, toques, toboggan caps, skirts, etc.

OUR MACHINERY ENABLES MANUFACTURERS TO "LEAD THE PROCESSION" INSTEAD OF STUMBLING ALONG WITH THE CROWD.

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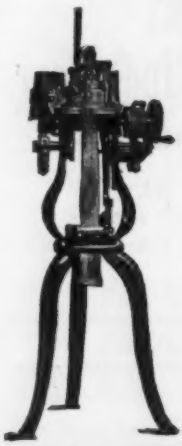

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MANUFACTURERS OF

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Automatic Welt and Loose Course Machines for Sock Tops. New Circular Stripers with Welt, Loose Course and Striping (Automatic), for Shirt Cuffs, Sock Tops, Hose Legs, Wristers, etc.

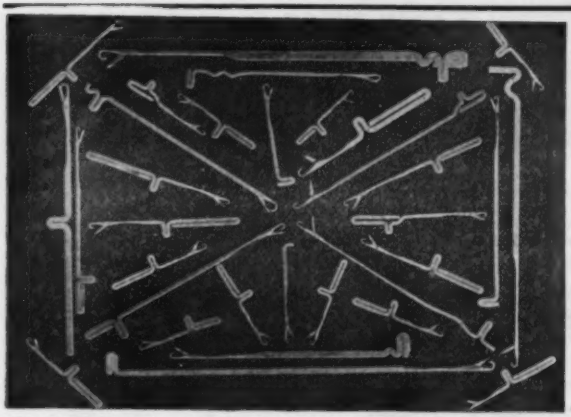
GOLF AND BICYCLE STOCKING MACHINES.

ALL KINDS OF

CIRCULAR RIBBED MACHINES,

For Men's Underwear, Ladies' and Misses' Hose Legs and Leggins.

CORRESPONDENCE SOLICITED.



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Needles for all

Knitting Machines

OUR

SUPERIOR

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Sunken Rivet Head Needles

will save you money every day in the year.

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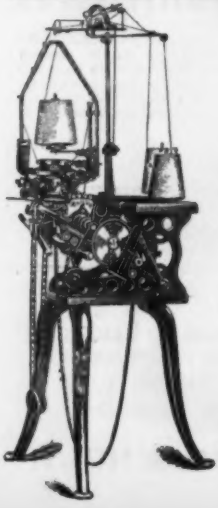

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Two-Feed 7-8 Automatic for Ladies String Work, also Black Legs with White Feet.

Regular 7-8 Automatic for all classes of Cotton Hose. Special 3-4 Automatic for Wool.

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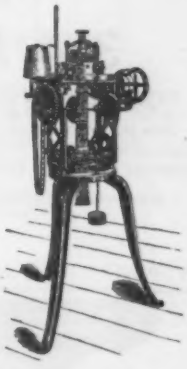

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GAS ENGINES for city or country. | EFFICIENT
BRUSHING MACHINERY | DURABLE
KNITTING MACHINERY | LOW IN PRICE.

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The only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics.
Blocks for Printing Hosiery.
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PERFECT FAST BLACK FOR HOSIERY.

THE WORK SPEAKS FOR ITSELF.

Dubois' Sanitary Fast Black Leads Them All.

Adopted by leading mills everywhere successfully. Mills started with Dye Formula for black with lisle thread finish, also with colors and bleaching formulas if desired, taught by Mr. Dubois himself. Will contract for the Dye formulas alone, or for any piece of machinery required to start fast black dyeing.

FOR LUMP SUM IN CASH OR ON INSTALMENTS.

The black is inexpensive, non-poisonous, color always uniform, will not crock, fine shade blue black or jet black produced as desired without extra cost.

Stockings dyed in one dip, right from the Knitting machine and leaves the goods strong. Best, safest, quickest and finest black in the world.

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No. 1 Cost $2.60 per 100 lbs.
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I guarantee all the above in every particular, or no money. Address Direct

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3-4 Automatic Knitter
FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and better goods. Costs less for repairs. Gives less trouble to fixers Range on Half Hose, from the coarsest to 220 needle.

Exclusive rights to Brown's ATTACHMENTS FOR LACE EFFECT.

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Cylinders and Dials for all size machines.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

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"OVERLOCK" MACHINE
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Patent twice sustained by U. S. Circuit Court of Appeals.

MAKES OVER 3000 STITCHES PER MINUTE.

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For SEAMING, HEMMING AND OVEREDGING Flat, Ribbed and Fancy Underwear and Hosiery. And for OVEREDGING Lace Curtains, Ribbons, Belts, Hat Bands, Flannels, Blankets and other Fabrics.

IT MAKES
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Business established in 1859.

THE ELASTICITY OF ITS STITCH EQUALS THE FULL STRETCH OF THE GOODS.

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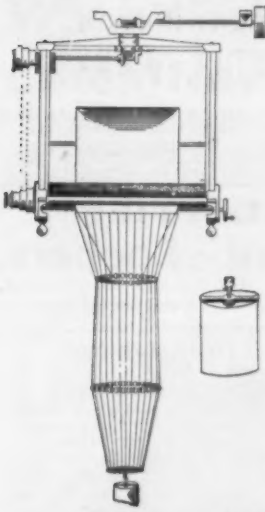

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Knit Goods Manufacturers.

DO NOT forget that if you buy the

EXCELSIOR DRYER

you are getting the Best and Most Economical Dryer on the Market. This is the testimony of those who have them in use—saving three-quarters in Space, one-quarter in time. Also, the

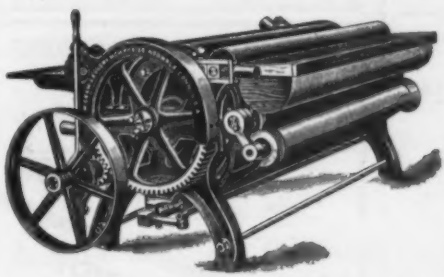
CHAMPION NECK MARKER

holds its own with any other. Come and see them in operation, and send for Circulars and Prices.

E. M. ANTISDEL,

Sole Owner and Manufacturer. **UTICA, N. Y.**

AUTOMATIC IRONING AND PRESSING MACHINE FOR KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

J. W. CRAW LAUNDRY MACHINERY CO.,

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THE

Merrow High Speed Crochet

and Scallop or Shell Machines,

For finishing the edges of Knit Goods, Bed Blankets, Horse Blankets, or other fabrics.

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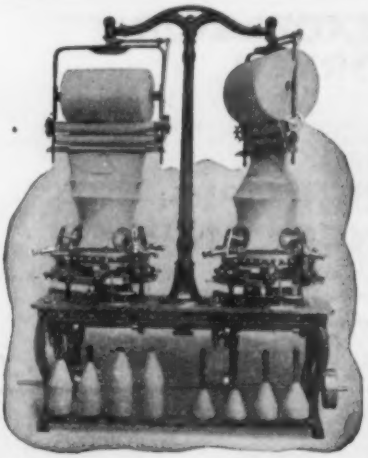
Flat Rib Knitting Machines, 2 to 5 sections, Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Collarette Attachments, etc., etc. All the latest improvements. Sinkers and all Rib Machinery supplies. Patent Springs for Dyeing Boards. Also Ribbed Anklets made to order. Branch Shop, AMSTERDAM, N.Y.



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Knitters, Winders, Burrs, Attachments.

BEATTIES' Patent Loopers.

Wm. Beattie & Son,
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An Illustrated Catalogue will be sent on application.

CIRCULAR AUTOMATIC RIB KNITTING MACHINERY FOR

Combination Suits,
Sweaters,
Richelieu Ribs,
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Ribbed Shirts,
Shaped Swiss Ribs,
Rib Tails, etc.

Over 1200 machines now in operation.

Also manufacturers of **COP WINDERS**

The HOMER P. SNYDER MFG. CO.,
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CRANE MFG. CO.
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Spring Needle Circular Knitting Machine

For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets

Celebrated Brand PYRAMID TRADE MARK **Lacings**

For Underwear, Overshirts and Sweaters,
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We make the best in

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HOSIERY BANDS AND LABELS

We carry all the "Specials."

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Manufacturers of
LATCH NEEDLES
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Manufactured by
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SCREW RIVETED BALMORAL AND DOUBLE RIB NEEDLES.
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All work guaranteed.

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MANUFACTURER OF ALL KINDS OF
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Standard Knitting Machine Needles,
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Parts for Wilcox & Gibbs Mfg., and all Sewing Machines
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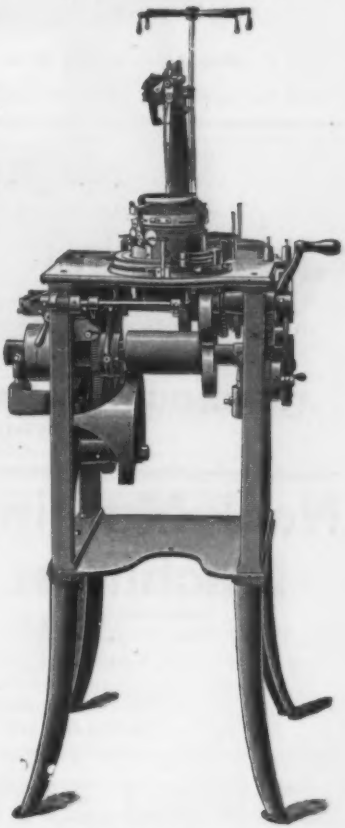
ACME
Automatic Knitter,
FOR SEAMLESS HOSIERY.
All Kinds and Gauges.



Best method of transferring ribbed legs and tops.

Greatest production of perfect work at least expense.

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Philadelphia Office:
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506 N. American St., PHILADELPHIA, PA., **Pioneer Builders of**

Knitting - Machinery

FOR SEAMLESS HOSIERY.

Estimates for Plants Complete.

Write for information and catalogue.

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The Industrial Mfg. Co., presents for **OUTRIGHT SALE**

The "Industrial" Overseaming Machine

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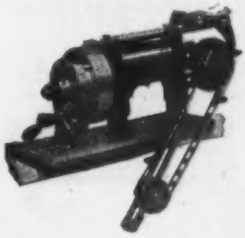

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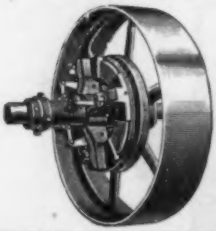

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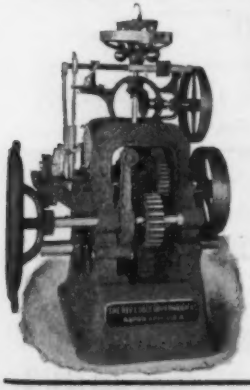

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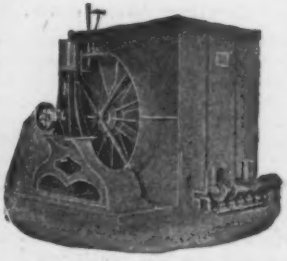

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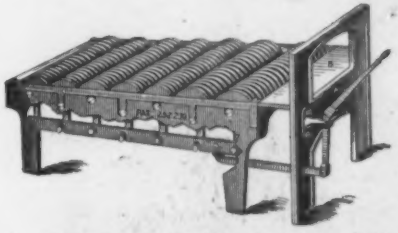

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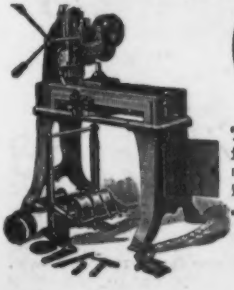

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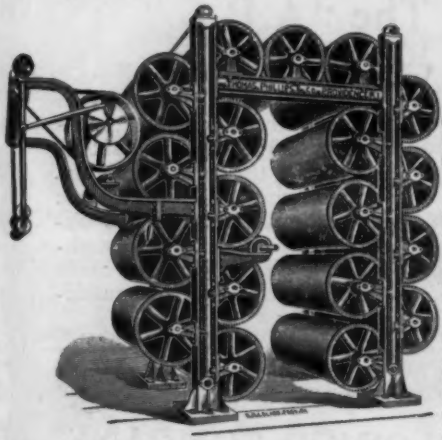

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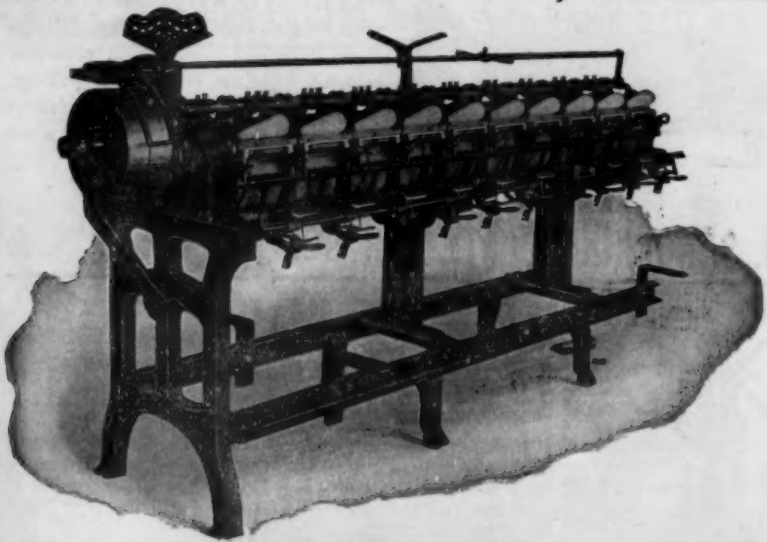

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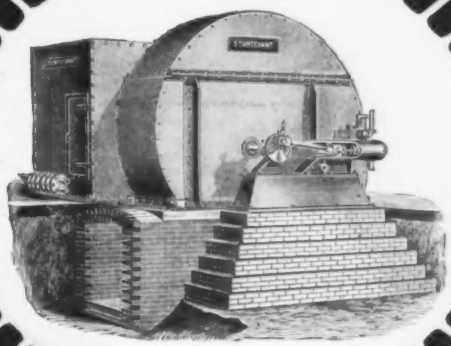

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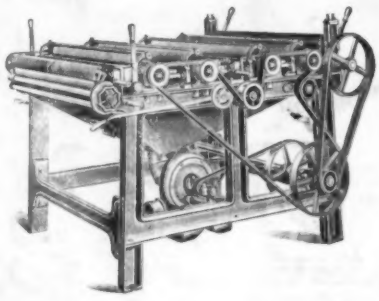

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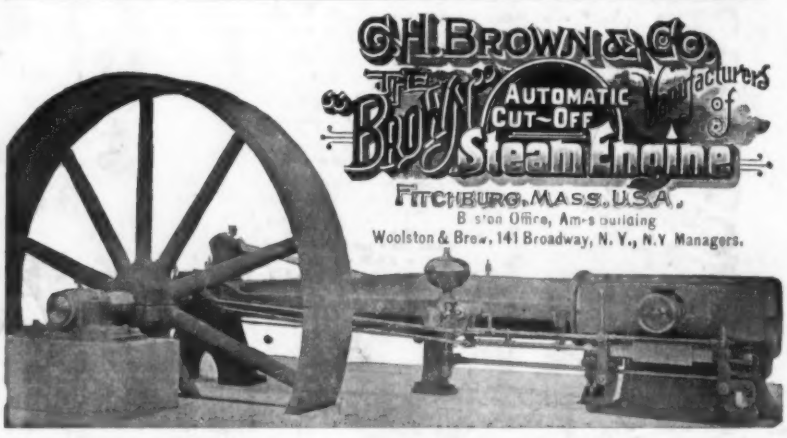

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